

**INSTITUTOS NACIONAIS DE CIÊNCIA E TECNOLOGIA – INCT  
ACOMPANHAMENTO E AVALIAÇÃO**

Período de abrangência do relatório: de 01/03/2009 a 27/04/2012.

**IDENTIFICAÇÃO DO PROJETO**

**TÍTULO:** Instituto Nacional de Ciência e Tecnologia de Astrofísica

**PROCESSO Nº:** 573648/2008-5 (CNPq) e 2008/57807-5 (FAPESP)

**COORDENADOR:** João Evangelista Steiner

**PROJETO DE PESQUISA**

**HOUVE ALTERAÇÕES NOS OBJETIVOS E/OU METAS PROPOSTOS?**  
( ) SIM ( X ) NÃO

Em caso positivo registrar as alterações ocorridas:

**HOUVE ALTERAÇÕES NO CRONOGRAMA ORIGINAL? ( ) SIM ( X ) NÃO**

Em caso positivo registrar as alterações ocorridas, como inclusão ou exclusão de objetivos e metas, dentre outros:

**HOUVE PROBLEMAS E/OU DIFICULDADES NA EXECUÇÃO DO PROJETO?:**  
( ) SIM ( X ) NÃO

Em caso positivo indicar quais foram:

**EQUIPE**

**HOUVE ALTERAÇÃO NA COMPOSIÇÃO ORIGINAL DA EQUIPE?**  
( X ) SIM ( ) NÃO

Em caso positivo indique o número de inclusões e exclusões:

**Responsável p/ laboratório associado** ( ) Inclusão ( ) Exclusão  
Justificar:

**Pesquisador** ( X ) Inclusão ( ) Exclusão

Obs: Foram incluídos onze pesquisadores no INCT-Astrofísica. Lista no anexo 1.

**DESCREVER OS MECANISMOS DE INTERAÇÃO UTILIZADOS ENTRE GRUPOS DE PESQUISA PARTICIPANTES DO INCT:**

Realização de workshops:

**- Verão Quântico 2011**

Local: Anchieta, ES. Período de: 20 a 25/2/2011

Financiamento: CAPES+CNPq+INCTA

**- Primeiro Workshop de e-Science na Astronomia Brasileira**

Local: UNICSUL – S. Paulo – SP. Data: 09/03/12

Financiamento: INCTA

**- First International Symposium on Science with the SOAR Telescope**

Local: Maresias, SP. Período: 13 a 19/05/11.

Financiamento: INCTA+LNA

**- I Workshop de Computação Científica em Astronomia**

Local: UNICSUL – São Paulo, SP. Período: 02 a 05/06/11.

Financiamento: INCTA

**- Workshop LLAMA**

Local: FAPESP- São Paulo, SP. Período: 8 e 9/08/11.

Financiamento: INCTA

**- South American Gemini Data Workshop**

Local: São Jose dos Campos, SP. Período: 27 a 30/10/11.

**- Science with the LSST: a Brazilian/US Joint Workshop**

Local: Campos do Jordão, SP. Período: 01 a 04/04/12.

**RELATAR EVENTUAIS DIFICULDADES ENCONTRADAS ENTRE OS GRUPOS DE PESQUISA PARTICIPANTES DA REDE E POSSÍVEIS MECANISMOS UTILIZADOS PARA SUPERAR ESTAS DIFICULDADES:**

Foi criado um “Comitê Científico”, com representantes dos principais grupos do INCT-A.

**HOUVE A INCLUSÃO OU EXCLUSÃO DE INSTITUIÇÕES E EMPRESAS?  
( X ) SIM ( ) NÃO**

**EM CASO POSITIVO INDIQUE O NÚMERO:**

**Instituição de Ensino e/ou Pesquisa** ( X ) Inclusão ( ) Exclusão

Justificar: Novos grupos se formaram nas seguintes instituições: Universidade Federal de Viçosa, Universidade Federal de São João Del Rei, Universidade Federal de Campina Grande, Universidade Federal do Pará e Universidade Federal do Rio de Janeiro, campus Macaé.

**Empresas** ( ) Inclusão ( ) Exclusão

Justificar:

## RESULTADOS OBTIDOS / METAS

### COMENTE OS 3 (TRÊS) PRINCIPAIS RESULTADOS CIENTÍFICOS E/OU TECNOLÓGICOS OBTIDOS ATÉ O MOMENTO PARA:

#### A – PESQUISA:

Conclusão e comissionamento do BTFI (Brazilian Tunable Filter Interferometer) e SIFS (SOAR Integral Field Spectrograph).

Publicação de 202 papers em 2011 (85% são Qualis A).

#### B – FORMAÇÃO DE RECURSOS HUMANOS:

Formação de 25 mestres/ano e 12 doutores/ano.

#### C – TRANSFERÊNCIA DE CONHECIMENTO E TECNOLOGIA:

1. Desenvolvimento de instrumentação; isso requer capacidade de tecnologia de ponta de quadros técnicos.
2. No BTFi foram formados 6 mestres em engenharia/tecnologia.

#### D – EDUCAÇÃO E DIVULGAÇÃO DA CIÊNCIA:

- 1- Estruturação de curso a distancia para professores de Ciências.
- 2- Formação da primeira turma de professores.

### ENUMERE OS ATÉ 03 (TRÊS) PRINCIPAIS IMPACTO(S) CAUSADO(S) PELAS AÇÕES E RESULTADOS DO PROJETO PARA A AMPLIAÇÃO, MELHORIA E CONSOLIDAÇÃO DA COMPETÊNCIA TÉCNICO-CIENTÍFICA NACIONAL PARA:

#### A – PESQUISA:

- 1- Publicação de 148 papers em 2009; 83% Qualis A
- 2- Publicação de 177 papers em 2010; 78% Qualis A
- 3- Publicação de 202 papers em 2011; 85% Qualis A

#### B – FORMAÇÃO DE RECURSOS HUMANOS:

Bolsas de IC: 39 alunos  
Bolsas de mestrado: 9 alunos  
Bolsas de doutorado: 1 aluno  
Bolsas de pos-doutorado: 12  
Bolsas de pesquisador visitante: 1

#### C – TRANSFERÊNCIA DE CONHECIMENTO E TECNOLOGIA:

Conclusão e comissionamento dois instrumentos de classe mundial para o telescópio SOAR.

## D – EDUCAÇÃO E DIVULGAÇÃO DA CIÊNCIA:

- 1- Estruturação do curso a distância para professores de ciências.
- 2- Formação da primeira turma em 2011.

## PARA FINS DE DIVULGAÇÃO, RELACIONAR RESULTADOS OBTIDOS QUE MEREÇAM DESTAQUE PARA O DESENVOLVIMENTO CIENTÍFICO, TECNOLÓGICO E/OU SOCIAL:

Ver sites:

-<http://WWW.lna.br/~sifs>

-<http://WWW.astro.iag.usp.br/~btffi>

## RESULTADOS EM NÚMEROS

OBS.: Os Currículos Lattes dos pesquisadores do INCT devem estar atualizados com relação às publicações e aos bolsistas, de onde serão coletados pelo CNPq os dados de publicação científica e de orientação.

A – INDICADORES DE PESQUISA	
NÚMEROS DA PRODUÇÃO TÉCNICO-CIENTÍFICA E ARTÍSTICA NO PERÍODO (anexar referências):	
TIPO	QUANTIDADE
SOFTWARE	
PATENTE	
PRODUTOS	
PROCESSOS	
PRODUÇÃO ARTÍSTICA (ESPECIFICAR)	
OUTROS (ESPECIFICAR): PAPERS	202 (em 2011). Anexo 2

B – INDICADORES DE TRANSFERÊNCIA DE CONHECIMENTO E TECNOLOGIA	
NÚMEROS DA PRODUÇÃO NO PERÍODO (especificar e anexar referências):	
TIPO	QUANTIDADE

C – INDICADORES DE EDUCAÇÃO E DIVULGAÇÃO DA CIÊNCIA	
NÚMEROS DA PRODUÇÃO NO PERÍODO (especificar e anexar referências):	
TIPO	QUANTIDADE

Mestres formados/ano	25
Doutores formados/ano	12

### INFORMAÇÕES ADICIONAIS

#### FORMAS DE DISPONIBILIZAÇÃO PÚBLICA DOS RESULTADOS DO PROJETO:

[www.astro.iag.usp.br/~incta](http://www.astro.iag.usp.br/~incta)

#### COMENTE AS PRINCIPAIS MELHORIAS IMPLANTADAS NAS INSTALAÇÕES FÍSICAS DA SEDE E DOS LABORATÓRIOS ASSOCIADOS AO INSTITUTO, COMO ADPTAÇÕES FÍSICAS, EQUIPAMENTOS, ETC.:

#### HOUE ATIVIDADES DE INTEGRAÇÃO COM OUTROS INCT's: ( x ) SIM ( ) NÃO

##### EM CASO POSITIVO COMENTAR:

Realização de eventos em 2009 e 2010.

### CONSIDERAÇÕES FINAIS

#### COMENTAR OUTROS ASPECTOS RELEVANTES DO DESENVOLVIMENTO GERAL DO INCT:

**LOCAL E DATA:** São Paulo, 26 de abril de 2011.

**ASSINATURA:**

**Joao E. Steiner**  
Coordenador do INCTA

## Anexo 1.

Lista de pesquisadores incluídos no INCT-Astrofísica período de junho/2011 a abril/2012:

<b>Nomes</b>	<b>CPF</b>	<b>Instituição</b>
Alexandre Miers Zobot	008.113.469-00	UFFS
César Henrique Lenzi	219.586.478-88	UFABC
Daniel Moser Faes	325.526.878-81	IAG/USP
João Maria da Silva	850.956.304-78	CFP/UFCG
Karín Menéndez-Delmestre	061.376.887-63	UFRJ/OV
Kelly Beatriz Vieira Torres Dozinél	028.332.876-23	UFSJ
Marcelo Medeiros Guimarães	041.778.906-85	UFSJ
Miguel Gustavo de Campos Batista	703.586.137-87	UFRR
Tânia Pereira Dominici	173.195.568-55	LNA
Vinicius Moris Placco	303.563.728-80	IAG/USP
Wagner Luiz Ferreira Marcolino	052.258.387-31	UFRJ/OV

## Anexo 2.

### Publicações em 2011.

1. Alves, Felipe O.; Acosta-Pulido, José A.; Girart, Josep M.; Franco, Gabriel A. P.; López, Rosario. **Infrared and Optical Polarimetry around the Low-mass Star-forming Region NGC 1333.** IRAS 4A [2011AJ....142...33A](#)
2. Alves-Brito, A.; Karakas, A. I.; Yong, D.; Meléndez, J.; Vásquez, S. **CNO and F abundances in the barium star HD 123396.** [2011A&A...536A..40A](#)
3. Alves-Brito, Alan; Hau, George K. T.; Forbes, Duncan A.; Spitler, Lee R.; Strader, Jay; Brodie, Jean P.; Rhode, Katherine L. **Spectra of globular clusters in the Sombrero galaxy: evidence for spectroscopic metallicity bimodality.** [2011MNRAS.417.1823A](#)
4. Armond, T.; Reipurth, B.; Bally, J.; Aspin, C. **Star formation in the "Gulf of Mexico".** [2011A&A...528A.125A](#)
5. Barbuy, B.; Spite, M.; Hill, V.; Primas, F.; Plez, B.; Cayrel, R.; Spite, F.; Wanajo, S.; Siqueira Mello, C.; Andersen, J.; and 5 coauthors **First stars. XV. Third-peak r-process element and actinide abundances in the uranium-rich star CS31082-001.** [2011A&A...534A..60B](#)
6. Basilakos, S.; Plionis, M.; Alves, M. E. S.; Lima, J. A. S. **Dynamics and constraints of the massive graviton dark matter flat cosmologies** [2011PhRvD..83j3506B](#)
7. Bazot, M.; Ireland, M. J.; Huber, D.; Bedding, T. R.; Broomhall, A.-M.; Campante, T. L.; Carfantan, H.; Chaplin, W. J.; Elsworth, Y.; Meléndez, J.; and 21 coauthors **The radius and mass of the close solar twin 18 Scorpii derived from asteroseismology and interferometry.** [2011A&A...526L...4B](#)
8. Bensby, T.; Adén, D.; Meléndez, J.; Gould, A.; Feltzing, S.; Asplund, M.; Johnson, J. A.; Lucatello, S.; Yee, J. C.; Ramírez, I.; and 14 coauthors. **Chemical evolution of the Galactic bulge as traced by microlensed dwarf and subgiant stars. IV. Two bulge populations.** [2011A&A...533A.134B](#)
9. Bensby, T.; Alves-Brito, A.; Oey, M. S.; Yong, D.; Meléndez, J. **A First Constraint on the Thick Disk Scale Length: Differential Radial Abundances in K Giants at Galactocentric Radii 4, 8, and 12 kpc.** [2011ApJ...735L..46B](#)
10. Bergano, Miguel; Fernandes, Francisco; Cupido, Luís; Barbosa, Domingos; Fonseca, Rui; Ferreira, Ivan; Grossan, Bruce; Smoot, George **Digital complex correlator for a C-band polarimetry survey** [2011ExA....30...23B](#)
11. Bianchi, L.; Herald, J.; Efremova, B.; Girardi, L.; Zobot, A.; Marigo, P.; Conti, A.; Shiao, B. **GALEX catalogs of UV sources: statistical properties and sample science applications: hot white dwarfs in the Milky Way.** [2011Ap&SS.335..161B](#)
12. Bianchi, Luciana; Efremova, Boryana; Herald, James; Girardi, Léo; Zobot, Alexandre; Marigo, Paola; Martin, Christopher **Catalogues of hot white dwarfs in the Milky Way from GALEX's ultraviolet sky surveys: constraining stellar evolution.** [2011MNRAS.411.2770B](#)
13. Bica, E.; Bonatto, C. **Star clusters or asterisms? 2MASS CMD and structural analyses of 15 challenging targets** [2011A&A...530A..32B](#)

14. Boduch, Philippe; da Silveira, Enio Frota; Domaracka, Alicja; Gomis, Oscar; Lv, Xue Yang; Palumbo, Maria Elisabetta; Pilling, Sergio; Rothard, Hermann; Seperuelo Duarte, Eduardo; Strazzulla, Giovanni  
**Production of Oxidants by Ion Bombardment of Icy Moons in the Outer Solar System**  
[2011AdAst2011E..15B](#)
15. Bonatto, C.; Bica, E.  
**Constraining the star formation rate in the solar neighbourhood with star clusters**  
[2011MNRAS.415.2827B](#)
16. Bonatto, C.; Bica, E.  
**From proper motions to star cluster dynamics: measuring the velocity dispersion in deconvolved distribution functions** [2011MNRAS.415..313B](#)
17. Bonatto, C.; Bica, E.  
**Uniform detection of the pre-main-sequence population in the five embedded clusters related to the H II region NGC 2174 (Sh2-252)** [2011MNRAS.414.3769B](#)
18. Bordalo, V.; Telles, E.  
**The L- $\sigma$  Relation of Local H II Galaxies** [2011ApJ...735...52B](#)
19. Borges Fernandes, M.; Meilland, A.; Bendjoya, P.; Domiciano de Souza, A.; Niccolini, G.; Chesneau, O.; Millour, F.; Spang, A.; Stee, P.; Kraus, M.  
**The Galactic unclassified B[e] star HD 50138. II. Interferometric constraints on the close circumstellar environment** [2011A&A...528A..20B](#)
20. Borissova, J.; Bonatto, C.; Kurtev, R.; Clarke, J. R. A.; Peñaloza, F.; Sale, S. E.; Minniti, D.; Alonso-García, J.; Artigau, E.; Barbá, R.; and 20 coauthors  
**New Galactic star clusters discovered in the VVV survey** [2011A&A...532A.131B](#)
21. Bullock, Eric; Szkody, Paula; Mukadam, Anjum S.; Borges, Bernardo W.; Fraga, Luciano; Gänsicke, Boris T.; Harrison, Thomas E.; Henden, Arne; Holtzman, Jon; Howell, Steve B.; and 7 coauthors. **GALEX and Optical Observations of GW Librae during the Long Decline from Superoutburst.** [2011AJ....141...84B](#)
22. Camargo, D.; Bonatto, C.; Bica, E.  
**A possible sequential star formation in the giant molecular cloud G174+2.5**  
[2011MNRAS.416.1522C](#)
23. Capak, P.; Mobasher, B.; Scoville, N. Z.; McCracken, H.; Ilbert, O.; Salvato, M.; Menéndez-Delmestre, K.; Aussel, H.; Carilli, C.; Civano, F.; and 15 coauthors  
**Spectroscopy of Luminous  $z > 7$  Galaxy Candidates and Sources of Contamination in  $z > 7$  Galaxy Searches** [2011ApJ...730...68C](#)
24. Caproni, A.; Monteiro, H.; Abraham, Z.; Teixeira, D. M.; Toffoli, R. T.  
**Modeling Very Long Baseline Interferometric Images with the Cross-entropy Global Optimization Technique** [2011ApJ...736...68C](#)
25. Carruba, V.; Machuca, J. F.  
**On the Emmenthal distribution of highly inclined asteroids** [2011MNRAS.418.1102C](#)
26. Carruba, V.; Machuca, J. F.; Gasparino, H. P.  
**Dynamical erosion of asteroid groups in the region of the Pallas family**  
[2011MNRAS.412.2052C](#)
27. Carruba, V.; Morbidelli, A.  
**On the first  $v_6$  anti-aligned librating asteroid family of Tina** [2011MNRAS.412.2040C](#)
28. Casagrande, L.; Schönrich, R.; Asplund, M.; Cassisi, S.; Ramírez, I.; Meléndez, J.; Bensby, T.; Feltzing, S.  
**New constraints on the chemical evolution of the solar neighbourhood and Galactic disc(s). Improved astrophysical parameters for the Geneva-Copenhagen Survey**



[2011A&A...530A.138C](#)

29. Castro, M.; Do Nascimento, J. D., Jr.; Biazzo, K.; Meléndez, J.; de Medeiros, J. R.  
**Solar twins in M 67: evolutionary status and lithium abundance**
30. Cavichia, O.; Costa, R. D. D.; Maciel, W. J.  
**Planetary nebulae in the inner Milky Way II: the Bulge-Disk transition**  
[2011RMxAA..47...49C](#)
31. Chiappini, Cristina; Frischknecht, Urs; Meynet, Georges; Hirschi, Raphael; Barbuy, Beatriz; Pignatari, Marco; Decressin, Thibaut; Maeder, André  
**Imprints of fast-rotating massive stars in the Galactic Bulge** [2011Natur.474..666C](#)
32. Chies-Santos, A. L.; Larsen, S. S.; Kuntschner, H.; Anders, P.; Wehner, E. M.; Strader, J.; Brodie, J. P.; Santos, J. F. C.  
**An optical/NIR survey of globular clusters in early-type galaxies. II. Ages of globular cluster systems and the relation to galaxy morphology** [2011A&A...525A..20C](#)
33. Cid Fernandes, R.; Stasińska, G.; Mateus, A.; Vale Asari, N.  
**A comprehensive classification of galaxies in the Sloan Digital Sky Survey: how to tell true from fake AGN?** [2011MNRAS.413.1687C](#)
34. Clark, J. S.; Ritchie, B. W.; Negueruela, I.; Crowther, P. A.; Daminieli, A.; Jablonski, F. J.; Langer, N.  
**A VLT/FLAMES survey for massive binaries in Westerlund 1. III. The WC9d binary W239 and implications for massive stellar evolution** [2011A&A...531A..28C](#)
35. Coelho, P.; Gadotti, D. A.  
**Bars Rejuvenating Bulges? Evidence from Stellar Population Analysis**  
[2011ApJ...743L..13C](#)
36. Coelho, P.; Percival, S. M.; Salaris, M.  
**Chemical Abundance Anticorrelations in Globular Cluster Stars: The Effect on Cluster**
37. Comerón, Sébastien; Elmegreen, Bruce G.; Knapen, Johan H.; Salo, Heikki; Laurikainen, Eija; Laine, Jarkko; Athanassoula, E.; Bosma, Albert; Sheth, Kartik; Regan, Michael W.; and 14 coauthors  
**Thick Disks of Edge-on Galaxies Seen through the Spitzer Survey of Stellar Structure in Galaxies (S<sup>4</sup>G): Lair of Missing Baryons?** [2011ApJ...741...28C](#)
38. Comerón, Sébastien; Elmegreen, Bruce G.; Knapen, Johan H.; Sheth, Kartik; Hinz, Joannah L.; Regan, Michael W.; Gil de Paz, Armando; Muñoz-Mateos, Juan-Carlos; Menéndez-Delmestre, Karín; Seibert, Mark; and 13 coauthors.  
**The Unusual Vertical Mass Distribution of NGC 4013 Seen through the Spitzer Survey of Stellar Structure in Galaxies (S<sup>4</sup>G)** [2011ApJ...738L..17C](#)
39. Comerón, Sébastien; Knapen, Johan H.; Sheth, Kartik; Regan, Michael W.; Hinz, Joannah L.; Gil de Paz, Armando; Menéndez-Delmestre, Karín; Muñoz-Mateos, Juan-Carlos; Seibert, Mark; Kim, Taehyun; and 9 coauthors.  
**The Thick Disk in the Galaxy NGC 4244 from S<sup>4</sup>G Imaging** [2011ApJ...729...18C](#)
40. Córscico, A. H.; Althaus, L. G.; Kawaler, S. D.; Miller Bertolami, M. M.; García-Berro, E.; Kepler, S. O.  
**Probing the internal rotation of pre-white dwarf stars with asteroseismology: the case of PG 0122+200** [2011MNRAS.418.2519C](#)
41. Costa-Duarte, M. V.; Sodré, L., Jr.; Durret, F.  
**Morphological properties of superclusters of galaxies** [2011MNRAS.411.1716C](#)
42. Da Rocha, C.; Mieske, S.; Georgiev, I. Y.; Hilker, M.; Ziegler, B. L.; Mendes de Oliveira, C.  
**Two formation channels of ultra-compact dwarf galaxies in Hickson compact groups**  
[2011A&A...525A..86D](#)

43. da Rocha-Poppe, P. C.; Faúndez-Abans, M.; Fernandes-Martin, V. A.; de Oliveira-Abans, M.; Fernandes, I. F.; Lago, P. J. A.  
**Long-slit spectroscopy of the peculiar Seyfert 2 galaxy HRG 10103**  
[2011MNRAS.410.1145D](#)
44. da Silva, Ronaldo; Silva-Valio, Adriana  
**A Method to Identify and Characterize Binary Candidates-A Study of CoRoT Data**  
[2011PASP..123..536D](#)
45. de Barros, A. L. F.; Domaracka, A.; Andrade, D. P. P.; Boduch, P.; Rothard, H.; da Silveira, E. F.  
**Radiolysis of frozen methanol by heavy cosmic ray and energetic solar particle analogues** [2011MNRAS.418.1363D](#)
46. de Filippis, E.; Paolillo, M.; Longo, G.; La Barbera, F.; de Carvalho, R. R.; Gal, R.  
**The luminosity function of the NoSOCS galaxy cluster sample** [2011MNRAS.414.2771D](#)
47. de La Rosa, Ignacio G.; La Barbera, Francesco; Ferreras, Ignacio; de Carvalho, Reinaldo R.  
**The link between the star formation history and  $[\alpha/\text{Fe}]$**  [2011MNRAS.418L..74D](#)
48. de Sanctis, M. C.; Migliorini, A.; Luzia Jasmin, F.; Lazzaro, D.; Filacchione, G.; Marchi, S.; Ammannito, E.; Capria, M. T.  
**Spectral and mineralogical characterization of inner main-belt V-type asteroids**  
[2011A&A...533A..77D](#)
49. de Sanctis, Maria Cristina; Ammannito, Eleonora; Migliorini, Alessandra; Lazzaro, Daniela; Capria, Maria Teresa; McFadden, Lucy  
**Mineralogical characterization of some V-type asteroids, in support of the NASA Dawn mission** [2011MNRAS.412.2318D](#)
50. de Souza, R. S.; Rodrigues, L. F. S.; Ishida, E. E. O.; Opher, R.  
**The effect of a single supernova explosion on the cuspy density profile of a small-mass dark matter halo** [2011MNRAS.415.2969D](#)
51. de Souza, R. S.; Yoshida, N.; Ioka, K.  
**Populations III.1 and III.2 gamma-ray bursts: constraints on the event rate for future radio and X-ray surveys** . [2011A&A...533A..32D](#)
52. de Souza, Rafael S.; Opher, Reuven  
**Origin of intense magnetic fields near black holes due to non-minimal gravitational-electromagnetic coupling.** [2011PhLB..705..292D](#)
53. de Souza, Rafael S.; Rodrigues, Luiz Felipe S.; Opher, Reuven  
**Random primordial magnetic fields and the gas content of dark matter haloes**  
[2011MNRAS.410.2149D](#)
54. Descamps, P.; Marchis, F.; Berthier, J.; Emery, J. P.; Duchêne, G.; de Pater, I.; Wong, M. H.; Lim, L.; Hammel, H. B.; Vachier, F.; and 9 coauthors.  
**Triplicity and physical characteristics of Asteroid (216) Kleopatra** [2011car..211.1022D](#)
55. Díaz-Giménez, E.; Zandivarez, A.; Proctor, R.; Mendes de Oliveira, C.; Abramo, L. R.  
**Fossil groups in the Millennium simulation. Their environment and its evolution**  
[2011A&A...527A.129D](#)
56. Domiciano de Souza, A.; Bendjoya, P.; Niccolini, G.; Chesneau, O.; Borges Fernandes, M.; Carciofi, A. C.; Spang, A.; Stee, P.; Driebe, T.  
**Fast ray-tracing algorithm for circumstellar structures (FRACS). II. Disc parameters of the B[e] supergiant CPD-57°,2874 from VLT/MIDI data** [2011A&A...525A..22D](#)
57. Donati, J.-F.; Gregory, S. G.; Alencar, S. H. P.; Bouvier, J.; Hussain, G.; Skelly, M.; Dougados, C.; Jardine, M. M.; Ménard, F.; Romanova, M. M.; Unruh, Y. C.  
**The large-scale magnetic field and poleward mass accretion of the classical T Tauri**

star TW Hya [2011MNRAS.417..472D](#)

58. Donati, J.-F.; Gregory, S. G.; Montmerle, T.; Maggio, A.; Argiroffi, C.; Sacco, G.; Hussain, G.; Kastner, J.; Alencar, S. H. P.; Audard, M.; and 5 coauthors  
**The close classical T Tauri binary V4046 Sgr: complex magnetic fields and distributed mass accretion** [2011MNRAS.417.1747D](#)
59. Dors, O. L., Jr.; Krabbe, Angela; Hägele, Guillermo F.; Pérez-Montero, Enrique  
**Analysing derived metallicities and ionization parameters from model-based determinations in ionized gaseous nebulae** [2011MNRAS.415.3616D](#)
60. Drake, N. A.; Pereira, C. B.  
**High-resolution spectroscopic observations of the metal-poor, chemically peculiar, and high velocity Fehrenbach & Duflot star** [2011A&A...531A.133D](#)
61. Draper, Zachary H.; Wisniewski, John P.; Bjorkman, Karen S.; Haubois, Xavier; Carciofi, Alex C.; Bjorkman, Jon E.; Meade, Marilyn R.; Okazaki, Atsuo  
**A New Diagnostic of the Radial Density Structure of be Disks** [2011ApJ...728L..40D](#)
62. Durret, F.; Laganá, T. F.; Haider, M.  
**The merging cluster Abell 1758 revisited: multi-wavelength observations and numerical simulations** [2011A&A...529A..38D](#)
63. Elmegreen, Debra Meloy; Elmegreen, Bruce G.; Yau, Andrew; Athanassoula, E.; Bosma, Albert; Buta, Ronald J.; Helou, George; Ho, Luis C.; Gadotti, Dimitri A.; Knapen, Johan H.; and 19 coauthors.  
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## Anexo 3.

# Report of the National Institute of Science and Technology in Astrophysics (INCT-A) - 2011

*Coordinator:* João E. Steiner (IAG-USP)

*Vice-coordinator:* Beatriz Barbuy (IAG-USP)

*Management Committee:* Albert Bruch (LNA), Beatriz Barbuy (USP), Daniela Lazzaro (ON), Hugo Capelato (INPE), Joao Steiner (USP) and Thaisa Storchi-Bergmann (UFRGS)

*Scientific Committee:* Adriano Cerqueira (UESC), Albert Bruch (LNA), Beatriz Barbuy (USP), Daniela Lazzaro (ON), Hugo Capelato (INPE), Ioav Waga (UFRJ), Jacques Lepine (USP), Joao Steiner (USP), Kepler Oliveira (UFRGS), Laerte Sodré (USP), Luis Paulo Vaz (UFMG), Raul Abramo (USP), Roberto Cid Fernandes (UFSC) and Thaisa Storchi-Bergmann (UFRGS)

## *What is the INCT-A? – An executive summary*

### *Context*

*Brazilian Astronomy, although young, has already made some important achievements. The first graduate programs were established in the 1970's and, since then, the community experimented continuous and vigorous growth. Today nearly 30 institutions support of astronomical research at some level. The first scientific equipment were planned and built in the early 1970's; an important strategic step was the construction of LNA – the first (and for long time the only one) national laboratory to operate in Brazil. Thanks to this laboratory, Brazilian Astronomy experienced a growth, both in quantity and in quality. This allowed joining the Gemini and SOAR consortia in the 1990's. These consortia operate world class astronomical instruments.*

*The situation of optical and infrared astronomy is, thus, quite favorable. The participation in the Gemini and SOAR consortia has put our community in contact with the best practices of science management and, at the same time, integrated networks of specialists. Although the SOAR telescope does not have its full instrumentation operational, we already can state that Brazilian contribution to the publications of both Gemini and SOAR consortia is at the highest ranking. At the same time the perspective of world-class instrumentation has revitalized the various groups and attracted young talented people to the graduate programs.*

*For the next decade, world astronomy is planning new and significant steps. At all wavelengths, a next generation of telescopes is under construction: optical 20-40m class (GMT, TMT, ELT) telescopes, radio-interferometers (ALMA, SKA), a new generation of space-borne instruments (IXO, Webb) and a large deep optical survey telescope (LSST). Many of these equipments are multinational initiatives, given the high costs involved, some of them, in the range of a billion dollars and will take 10 to 15 years to be built. Direct participation in such projects is beyond our possibilities, but there are niches from which our astronomy may benefit. The form and intensity of these benefits depend on some new*

investments but mostly on careful and strategic planning. If this is not done, our community will have less and less opportunities in the international scenarios for the coming decades.

In the present INCT, a significant number of researchers from many institutions meet, to plan and implement actions, having in mind the future of Brazilian Astronomy. **We are researchers from diverse institutions and of distinct specialties, but we all need the same scientific infrastructure and above all, similar collective strategies.** These are the characteristics that provide the **unity** to this initiative. These strategies are more and more necessary, given the high costs of the new research equipment and timescales needed for their construction.

Our community already has a national laboratory (LNA) that operates the national infrastructure in optical and infrared astronomy. The INCTA aims toward a partnership with LNA and other institutions to mobilize the community in fostering the best insertion of Brazilian Astronomy in the great international projects underway and those that still will be proposed.

Moreover, we want to promote the culture of technological innovation by supporting the development of world class instrumentation aimed at basic research.

If in the recent past Brazilian Astronomy has advanced in a significant way, its future depends on our planning and organization capabilities. New large and expensive projects are under way in the developed countries, many of them in the form of international consortia, given their high costs, which are prohibitive toward our direct participation. However it is possible to create alternative routes, identifying niches that can bring benefits to our science through creative strategies of international cooperation.

Such associations will increase the networking, both institutional and individual, showing us the best international practices of organization, planning and management of science. This effort is of fundamental importance to provide the environment for the next generation of scientist to perform frontier research.

The “Instituto Nacional em Ciência e Tecnologia em Astrofísica – INCTA”, in addition to the host institute, has one associated laboratory (LNA), 3 other MCT research institutes, 14 federal universities, 3 state universities and 6 private universities, comprising a total of 32 research groups, 12 being consolidated and 20 emerging ones in 27 different institutions. A total of 173 PhD scientists are joining the institute; 79 of them have CNPq scientific productivity fellowship, 12 being level 1A.

## **Mission**

The mission of the National Institute of Science and Technology in Astrophysics is to insert Brazilian Astronomy into the future of the World Astronomy.

## **Strategic Goals**

### **1- Maximizing the return from the Gemini and SOAR telescopes.**

a) *Scientific return:* Brazil already presents the highest productivity index among the Gemini partners (Brazilians have used 2.3% of the time and published 10% of the papers). For the SOAR telescope this statistical comparison is still premature as the telescope was built about 5 years later than Gemini. Surely the numbers that matter are not only the number of papers. Quality is also relevant. As a goal, we propose that Brazil maintains the leadership in scientific productivity for both Gemini and SOAR consortia for the next 5 years.

b) *Graduate programs:* There are 11 graduate programs that offer Master+PhD programs in Astronomy (USP; UFRGS; UFMG; ON; INPE; UFRN; UFSC; UNIVAP; UFSM; OV-UFRJ, FEG-UNESP). Another 4 offer master degree only (UNICSUL; UNIFEI; UESC; UERN). The possibilities opened with the access to the Gemini and SOAR telescopes have

attracted many new talented people to Astronomy. Today we have a good number of promising talented young people in our graduate programs and integrating them in the scientific production with the use of large telescopes and world-class instruments is one of the most effective ways of attracting and educating more talented people. Our goal is to double the number of papers published by Brazilian graduate students with data from the Gemini and SOAR telescopes in the next 3 years (2009-11 compared to 2006-08) with a following growth of 15% per year.

c) *Supporting emerging groups:* Besides attracting and educating talented people, we also want them to get a job in our country. Our major research institutes seem to be saturated growth wise. At the same time, the vast majority of universities do not have a single astronomy professor. In recent years Brazilian Astronomy has, in fact, experimented a new phenomenon: non-traditional universities, both public and private, have hired a number of young and productive astronomers in their faculty. These new groups, often very small in number, need to be supported, integrated in networks and have access to the best existing equipment. Our goal is to double the number of papers published with authors from emerging groups with data obtained from Gemini, SOAR and alike, for the next 3 years, followed by a growth of 15% per year. Among other incentives, INCTA will provide support to their research, by supplying computer equipment to researchers that obtain observing time with large telescopes provided they are justified within the aims of the Institute. We propose to support the participation of people from emerging groups in scientific meetings when presenting results from large telescopes. These groups will also have access to financial support to foster national and international networking, that is, contact with scientists for seminars, to avoid intellectual isolation, as most of these groups are located far from the main centers.

d) *Stimulate the development of instrumentation for the Gemini and SOAR telescopes.* The Brazilian participation in the Gemini and SOAR consortia has allowed, for the first time, the effective construction of modern instruments for large telescopes. Currently Brazil is concluding the construction of the SIFS – SOAR Integral Field Spectrograph – with 1300 fibers, capable of operating with adaptive optics. Other two instruments are in distinct phases of construction: the Steles (high resolution spectrograph) and the BTFI (Fabry-Perot large field imaging spectrograph). Our goal: to conclude the construction and commissioning of the three instruments underway and begin a new one in the next three years.

**2 – Brazilian Astronomy in the era of the LSST and ELT projects.** The next generation of large telescopes is being planned now. The GMT, TMT and E-ELT are in the process of starting their construction. It is important for Brazilian astronomy to establish a strategy for the era of ELTs, that will be operational by the year 2020. The Large Synoptic Survey Telescope, on the other hand, is a North-American initiative for building and operating a telescope of 6.5 m effective aperture (8.4m nominal) to monitor the sky in 6 filters. This will be a deep survey with an unprecedented approach in the sense that it will revisit the same regions in the sky at about every 4 days, so that it will add a temporal dimension to the data. The magnitude limit for single observations will be  $r \sim 24$  and it will have a cumulative limit of  $r \sim 27.5$ . This project has 4 main broad goals: a) the nature of dark energy and dark matter; b) The transient sky; c) The structure of the Milky Way and d) The structure of the Solar System. This project will make some observations available in real time having profound impact on Brazilian Astronomy.

**3 – Virtual observatories.** Great part of the data from space missions and also from ground based telescopes is available in databases. These datasets contain a wealth of information and mining them may be of enormous benefit to Brazilian Astronomy, without proportional

financial investments. Significant effort in software is imperative to make the appropriate and necessary development. Our goal is to have an operational network of virtual observatories in Brazil within the next 3 years.

**4 – New projects of scientific equipment.** A minimum of 3 new projects, to be defined by the Science committee, will be elaborated and proposed: at least one in radio-astronomy, at least one scientific satellite and at least one in optical/infrared astronomy. These projects will be elaborated to the point where they can be presented to the funding agencies or to possible international partners.

**5 – Education activities:** Brazil has currently about 300 000 teachers of Science and Mathematics. The content and knowledge of Astronomy is minimum. We propose to organize a distance learning course on Astronomy for science teachers all over the Country. The idea is to establish a virtual ambient for an online “distance learning course”. We propose to establish partnerships with the State Governments and Universities to create a large network to foster this idea.

## **INCT-A: Institutions**

INCT-A is a network of 173 researchers of the following institutions

### **Host Institution:**

Instituto de Astronomia, Geofísica e Ciências Atmosféricas – Universidade de São Paulo

### **Associated Laboratory:**

Laboratório Nacional de Astrofísica – LNA

### **Associated Universities and Institutes (29):**

1. \*FURG – Fundação Universidade do Rio Grande – RS
2. \*UCS – Universidade de Caxias do Sul - RS
3. \*UDESC – Universidade para o Desenvolvimento do Estado de Sta. Catarina - SC
4. \*UEFS – Universidade Estadual de Feira de Santana - BA
5. \*UEL – Universidade Estadual de Londrina -PR
6. \*UFABC – Universidade Federal do ABC-SP
7. \*UFJF – Universidade Federal de Juiz de Fora-MG
8. \*UFPEl – Universidade Federal de Pelotas-RS
9. \*UFS- Universidade Federal de Sergipe - SE
10. \*UFSCar - Universidade Federal de São Carlos – SP
11. \*UFSM – Universidade Federal de Santa Maria-RS
12. \*UNICSUL – Universidade Cruzeiro do Sul - SP
13. \*UNIFEI – Universidade Federal de Itajubá-MG
14. \*UNIFESP - Universidade Federal de São Paulo - SP
15. \*UNIPAMPA – Universidade Federal do Pampa-RS
16. \*UNIVAP- Universidade do Vale do Paraíba - SP
17. \*UNIVASF – Universidade Federal do Vale do São Francisco-PE
18. Centro Brasileiro de Pesquisas Físicas - CBPF
19. CTA/MD – Comando Tecnológico da Aeronáutica – SP



20. *Instituto Nacional de Pesquisas Espaciais – INPE*
  21. *Observatório Nacional – ON*
  22. *UESC – Universidade Estadual de Santa Cruz – Ilhéus/BA*
  23. *UFMG – Universidade Federal de Minas Gerais-MG*
  24. *UFRGS – Universidade Federal do Rio Grande do Sul-RS*
  25. *UFRJ – Universidade Federal do Rio de Janeiro-RJ*
  26. *UFSC – Universidade Federal de Santa Catarina-SC*
  27. *UNB – Universidade de Brasília - DF*
  28. *UNESP – Universidade Estadual Júlio de Mesquita Filho-SP*
  29. *Universidade Presbiteriana Mackenzie - SP*
- (\*) – *Emergent groups*

## The report: 2011

### Introduction

This is a scientific report of the National Institute for Science and Technology in Astrophysics - INCT-A. The activity INCT-A began in May 2009, after the first resources were received. Soon after, we had the meeting of the IAU General Assembly in Rio de Janeiro, which required very large concentration of efforts of the main leadership. Therefore the activities started in fact in the second half of 2009 and were accelerated in 2010 and 2011.

In May 2009 the Scientific Committee of INCT-A decided to adopt as a method of planning, the elaboration of "White Papers" for the different activities. Two months later, the MCT has formed a Special Committee on Astronomy - CEA. This Commission also decided to produce "White Papers" (WP), hence the initiative of the WP/INCT-A merged with those of CEA and a significant number of WP was released. This is the first step of planning INCT-A and WP with strong participation of members of INCT-A are reproduced in the annexes and make up the essence of this report. Both this report as the other documents are available to the public on the website of INCT-A:

[www.astro.iag.usp.br / incta](http://www.astro.iag.usp.br/incta)

Below we present results, by item, of our five strategic objectives.

### 1 - Return on investments in the Gemini and SOAR

#### *1a - Scientific Production*

In 2009, the 144 researchers of the INCT in Astrophysics published 148 papers. Of these, 83% were published in journals classified as Qualis A by CAPES (see Table 1). In 2010, 177 papers were published, 78% of them were Qualis A, 12% Qualis B (see Table 2). **In the year of 2011, 202 papers were published, 85% of them were Qualis A and 5%, Qualis B** (see Table 3).

It is true that significant scientific output would have occurred without the existence of INCT. On the other hand it shows that the group of researchers linked to INCT has a great capacity for scientific work and that a strategic plan for that area makes sense. In the year of 2011 the number of members was 173. The growth of members was 10% per year and the growth of average scientific productivity per person per year was 7%.

Brazil's participation in the Gemini and SOAR has shown significant return. In Gemini, the Brazilian participation in refereed publications is already about 10% and is growing.. Altogether 95 Brazilian authors have signed papers with data from Gemini to date.

In SOAR, scientific production is still incipient. This telescope began its operation five years after the Gemini. Still, we can say that Brazil accounts for 54% of the papers published to date, having used only 30% of the time.. Perhaps more important at this time is that the SOAR Telescope has enabled Brazilian Astronomy to establish a world class instrumentation program (see below).

#### *1b / c - Human Resources and Emerging Groups*

In terms of human resource training, the INCTA allocated postgraduate scholarships for Masters, restricted to emerging groups. In addition, the emerging groups produced a "White Paper" proposing a strategy for action.

A collection of books in Astronomy, written in Portuguese, was acquired by INCT-A and allocated to all emerging groups.

A total of 16 lap-tops, 11 desk-tops, 2 VO servers and 1 videocon equipment were allocated to the emerging groups. 39 scientific initiation fellowships, 8 master degree fellowships and 1 PhD fellowship were allocated to the emerging groups. A total of 12 pos-docs fellowships were also allocated.

The researchers of the INCT-A advised 25 Ms/year and 10 PhD theses/year.

### ***1d - Instrumentation***

The SOAR Telescope has enabled the development of a world-class instrumentation program. In December/2009, SIFS (SOAR Integral Field Spectrograph) was sent (with financial support from INCT-A) to Chile. This spectrograph is already installed on the telescope and is in its commissioning phase. The spectrograph, with a cost of US\$ 1 420 000.00, was funded mostly by FAPESP with a contribution from LNA/MCT. The participation of INCTA was small (components, transportation and fixing).

Most of the INCT/FAPESP spending in the first two years was related to BTFi (Brazilian Tunable Filter Imager). This project, coordinated by Prof. Claudia Mendes de Oliveira, has a budget of one million dollars and is being funded directly by FAPESP (53%), indirectly by FAPESP through INCTA (29%) and by LNA (13%). The instrument has been transported to Chile and is being commissioned.

## **2 - Brazil in the era of LSST and ELTs**

The discussions on ELTs (Extremely Large Telescopes) have taken much of the efforts of INCTA. Several contacts and meetings were held between the sub-group with special responsibility and the various projects.

## **3 - Virtual Observatories**

Researchers participated in international events in the IVOA-International Virtual Observatory Alliance every year. Through INCTA, Brazil became a member of the IVOA.

## **4 - New projects**

The INCT-A has supported the study of a collaboration between groups from Spain and Brazil to build the J-PAS, a 2.5 meter telescope with 7 square degrees of field of view and 42 narrow band filters. This project aims to study the Physics of the Accelerating Universe (PAU). A southern version (PAU-Brasil) is under consideration.

Another project proposed in the context of the INCTA was LLAMA (Latin-American Millimetric Array) which was discussed within the INCTA and submitted to FAPESP. In 2011 a workshop on this proposal was held in FAPESP and financed by INCTA. In April 2012 it was approved by FAPESP.

## **5 - Education**

For the past decade the number of professional astronomer has grown considerably in Brazil. Meanwhile, the educational paradigms for basic levels schools have also changed. A broad range of new scientific and technological approaches are now mandatory, and Astronomy has finally been placed as a key theme for science teaching. However, despite of

the increasing number of astronomers in the country, Astronomy has not reached the teacher's undergraduate courses. As a consequence, lectures at all basic level schools lack on scientific precision and essential concepts are misunderstood even by those who are supposed to teach. Currently, there are around 300,000 teachers of basic levels schools teaching Astronomy without any undergraduate level courses.

In this context, the INCT-A approved the creation of a working group on Astronomy Education to develop one of the strategic goals of the project. The working group is responsible for:

- create a course of Astronomy for teachers of basic level schools (completely free);
- establish a virtual ambient for an online “distance learning course”;
- establish partnerships with local state government and federal government in order to guarantee professional advantages for the teachers;
- establish a network between the centers of Astronomy in Brazil in order to reach the maximum number of teachers, focusing on the less developed regions of the country.

The working group is formed by astronomers of several institutions including universities in South, Southeast and Northeast regions of Brazil. It also counts with the presence of experts on educational sciences that helps on the creation of the texts, podcasts, movies and animations that are been created for the online courses. The production of texts on basic Astronomy and Astrophysics was provided by the scientists members of the INCT-A. The current stage of the project is of adapting the texts to its educational context, which is being done by the learning science experts hired for this purpose. Meanwhile, the virtual ambient is also in the production process.

The first course has already been completed.

## Investments made in the period 2009-2011

### Acquisition of computer facilities for emerging groups:

- **16 Lap-top computers:**

1. *Alexandre Soares de Oliveira (UNIVAP)*
2. *Alexandre Zobot (UFFS)*
3. *Cássio Barbosa (UNIVAP)*
4. *Diana Pilling (UNIVAP)*
5. *Fabício Ferrari (UNIPAMPA)*
6. *Gabriel Hickel (UNIFEI)*
7. *Hecktor Monteiro (UNIFEI)*
8. *João Maria da Silva (UFMG)*
9. *Kelly Torres (UFSJ)*
10. *Lucimara Martins (UNICSUL)*
11. *Marcelo Guimarães (UFSJ)*
12. *Nádja Magalhães (UNIFESP)*
13. *Natália Landim (UFV)*
14. *Paulo Afrânio Lopes (OV-UFRJ)*
15. *Sergio Pilling (UNIVAP)*
16. *Wilton Dias (UNIFEI)*

- **11 Desk-Top computers:**

1. *Alexandre Zobot (UFSC-Joinville)*
2. *André Ribeiro (UESC)*
3. *Antonio Guimarães (UFRJ- Macaé)*
4. *Diego Falceta-Gonçalves (USP-Leste)*
5. *Gabriel Hickel (UNIFEI)*
6. *Gustavo Lanfranchi (UNICSUL) x2*
7. *Henry Plana (UESC)*
8. *Irapuan Rodrigues (UNIVAP)*
9. *Ivan Soares (UNB)*
10. *Rogemar Riffel (UFES)*

### **Videocon equipment**

Sílvia Lorenz (UFRJ)

### **Virtual Observatory servers:**

Paula Coelho (UNICSUL)

Roberto Cid Fernandes (UFSC)

### Acquisition of Astronomy books for emerging groups

1. 2x UESC
2. FURG
3. UEFS
4. UFABC
5. UFGC

6. UFRJ/Observatório Valongo
7. UFRJ-Macaé
8. UFS
9. UFSC
10. UFSC - Joinville
11. UFSJ
12. UFSM
13. UFV
14. UNICSUL 2x
15. UNIFEI
16. UNIFESP
17. UNIPAMPA
18. UNIVAP 2x
19. UNIVASF

### **Acquisition of computer facility for community use**

#### **High Performance GPU processor**

Alex Carciofi (IAG-USP)

This equipment, running at 2.3 teraflops, has been installed at IAG-USP for community use.

Desk-top computer were allocated to people working for the INCT-A

Carlos Paladini (IAG-USP)

Anne Louise Scarinci (IAG-USP)

Maria Teresa Lopes (IAG-USP)

### **International Travel**

- Visit to ALMA (Chile)
- Visit to TMT and GMT (Pasadena CA-USA)
- PFS (Los Angeles – USA)
- J-PAS (Terruel - Spain)
- SPIE Astronomical Telescopes and Instrumentation (San Diego-USA)
- Asymmetric Planetary Nebulae V (UK)-Denise Gonçalves
- Virtual Observatory (Munich - Germany)
- Virtual Observatory (Victoria - Canada)
- Gemini users training (Tucson – USA)
- Visit to SPARTAN (Chile)
- Observation mission to IRTF (Hawaii)
- Virtual observatory (Naples - Italy)
- Workshop Astro-informatics 2011 - Sorrente, Itália
- Visit to the Open University (EaD) Milton Keynes, England
- Meeting with LSST – Tucson AZ USA
- Meeting with CFHT – Hawaii USA
- J-PAS meeting – Terruel, Spain
- 18 trips to La Serena for the Comissioning of the SOAR instruments SIFS and BTFI

## Support to Instrumentation

- SIFS – SOAR Integral Field Spectrograph
- BTFI –Brazilian Tunable Filter Interferometer
- LLAMA- Latin-American Astronomical Millimetric Array

## Events held in 2009 and 2010

### *Space Astronomy in Brazil*

IAG-USP, held in September 2009

INCT-A + INCT INESPAÇO

### *Instrumentation*

USP-São Carlos, School on Instrumentation for Astronomy and Organic Electronics held in September 2010.

INCT-A + INCT Organic Electronics

### **The ASTER project**

*Sao Jose dos Campos, 27/10/2010*

INPE+INCT-A

## Events held in 2011 and 2012

### **Verão Quântico 2011**

*Anchieta ES 20 a 25/2/2011*

CAPES+CNPq+INCTA

### **First International Symposium on Science with the SOAR Telescope**

*Maresias, SP – 13-19/05/11*

INCTA+LNA

### **I Workshop de Computação Científica em Astronomia**

*UNICSUL 02-05/06/11*

INCTA

### **Workshop LLAMA**

*FAPESP – 8 e 9/08/11*

INCTA

### ***South American Gemini Data Workshop***

*S. Jose dos Campos, 27-30/10/2011*

### ***Primeiro Workshop de e-Science na Astronomia Brasileira***

*09/03/12 – IAG-USP – S. Paulo - SP*

INCTA

### ***Science with the LSST: a Brazilian/US Joint Workshop***

*Campos do Jordão 01 a 04/04/2012*

## **HUMAN RESOURCES**

*Master dissertations and PhD theses graduated in 2009 and 2010 under the advice of INCT-A members.*

2009: Ms - 25; PhD – 10

2010: Ms – 25; PhD – 12

## **FELLOWSHIPS ALLOCATED BY THE INCT-A**

### **Fellowships: Iniciação Científica**

1. Adam Smith Gontijo Brito de Assis (Orientador: Ivan Soares Ferreira/UNB)
2. Aghata Harumi da Costa (Orientadora: Rose Clívia dos Santos/UNIFESP)
3. Anderson Seiji Okada (Orientadora: Nadja Magalhães/UNIFESP)
4. Ariana Franca Clavia (Orientador: Luiz Paulo Vaz/UFGM)
5. Dalton Dias Meira (Orientador: Francisco Carlos R. Fernandes/UNIVAP)
6. Arthur Eduardo da M. Loureiro (Orientador: Horácio Dottori/ UFRGS)
7. Calliu Icaro da Silva Soares Rosa (Orientador: Militão Figueiredo/ UNIVASF)
8. Davi Rohe Salomon da Rosa Rodrigues (Orientador: Daniel Müller/UNB)
9. Dino Beghetto Junior (Orientador: Irapuan Rodrigues Oliveira Filho/UNIVAP)
10. Elizabete Guitzel (Orientadora: Nadja Magalhães/UNIFESP)
11. Felipe de Paula Lima (Orientador: Ivan Soares Ferreira/UNB)
12. Filipe Fontanela (Orientador: Raymundo Baptista/UFSC)
13. Francisco Elânio Bezerra (Orientador: Gustavo Lanfranchi/UNICSUL)
14. Frederico Guilherme de Oliveira (Orientador: Sergio Pilling/UNIVAP)
15. Frederico Vilela de Lima (Orientador: Anderson Caproni/UNICSUL)
16. Gabriel Martins Palma Perez (Orientador: Jorge Melendez/IAG)
17. Gabriela Augusta Prando (Orientador: Gustavo Rojas/UFSCAR)
18. Graciana Brum João (Orientador: Fabrício Ferrari/ FURG)
19. Guilherme Muller Peccini (Orientador: Horacio Dottori/UFRGS)
20. Jose Declerk Buaca Sinadinse (Orientador: Francisco Carlos Rocha Fernandes/UNIVAP)
21. Helder José Farias Lima (Orientador: Alexandre Soares de Oliveira/UNIVAP)
22. Jamille Almeida Feitosa (Orientadora: Maria Jaqueline Vasconcelos/UESC )
23. Levy Scalise Maciel (Orientador: Tatiana Michtchenko/IAG)
24. Luenne Nailam Sousa Nascimento (Orientador: André Luis Batista Ribeiro/UESC)
25. Luis Fernando Basso (Orientador: Odilon Giovannini/UCS)
26. Marcos Antonio Fonseca Faria (Orientadora: Tania Domicini/LNA)
27. Mariana Arantes Mazzi (Orientador: Augusto Damineli/IAG)
28. Nyergton Barreiros dos Santos Costa (Orientador: Militão Vieira Figueiredo/UNIVASF)
29. Pablo Chagas Oliveira (Orientadora: Thaisa Storchi-Bergmann/UFRGS)
30. Rafael Luiz Bernardi (Orientador: Abílio Mateus Jr/ UFSC)
31. Rafael Pantaleão Moreira (Orientador Oli Dors Jr/ UNIVAP)
32. Renato da Silva Severo (Orientador: Fabricio Ferrari /UNIPAMPA)
33. Renato Mello da Silva Farias (Orientador: Wagner Marcolino/Observatório do Valongo)
34. Rodrigo Voivodic (Orientador: Laerte Sodré Junior/IAG)
35. Sergio Henrique M. Douwens dos Santos (Orientador: Valerio Carruba/UNESP)
36. Thiago Marcel de Almeida Santana (Orientador; Iranderly Fernandes/UEFS)
37. Wagner Schlindwein (Orientador: Raymundo Baptista/UFSC)



38. Walter Silva Martins Filho (Orientadora: Thais Mothé Diniz/OV) Alexandre Campos
39. Vergueiro Monteiro de Almeida (orientador Caius Selhorst/UNIVAP)

#### **Fellowships: master**

1. Alexandre Bergantini de Souza (Orientadora: Diana Andrade/UNIVAP)
2. André Luiz de Amorim (Roberto Cid Fernands/UFSC)
3. Astor Leão Schonell Jr (Orientador: Rogemar Riffel/UFSM)
4. Bruno Correia Mota (Alex Carciofi/ IAG-USP)
5. Fellipy Dias Silva (Orientadora: Thais Idiart/IAG-USP)
6. Iara Tosta e Melo (Orientador: Anderson Caproni/ UNICSUL)
7. Luciana de Oliveira Ruiz (Orientador: Gustavo Lanfranchi/UNICSUL)
8. Suzi Izaquiel Ferreira Diniz (Orientadora: Lucimara Martins/UNICSUL)
9. William Schoenell (Orientador: Roberto Cid Fernandes Junior/UFSC)

#### **Fellowship: Doctorate**

Carlos Augusto Molina Velasquez (Paulo Afrânio Augusto Lopes/OV-UFRJ)

#### **Fellowship: Technological and industrial development**

1. Áurea Garcia (LNA)
2. Marília Jobim Sartori (LNA)

#### **Fellowships: Post-Doctorate**

1. Anne Louise Scarinci Brandao (Orientador: Diego Falceta Gonçalves-EAD/USP)
2. Cintia Quireza Campos (Orientadora: Denise Rocha Gonçalves/OV-UFRJ)
3. Daniela Borges Pavani (Orientador: Eduardo Bica/UFRGS )
4. Dinah Moreira Allen (Orientador: Diego Falceta Gonçalves-EAD/USP)
5. Iranderly Fernandes de Fernandes (LNA)
6. Marcos Vinicius Borges Teixeira Lima (Orientador: Laerte Sodr /IAG-USP)
7. Marina Trevisan (Reinaldo Carvalho/INPE)
8. Natalia Vale Asari (Orientador: Roberto Cid Fernandes Junior/UFSC)
9. Paulo Fernando Penteado (Cl udia Mendes de Oliveira/IAG-USP)
10. Tiago S. Gonalves (Paulo Afr nio Lopes/OV-UFRJ)

#### **Fellowships: Visiting Fellow (BEV-A)**

Noemi Pinilla-Alonso (Orientadora: Thais Moth -Diniz/UFRJ)

## SCIENTIFIC PRODUCTION – 2009/2010

**Table 1 - Distribution of the papers published by the INCT-A researchers in 2009, by journal**

<b>Journal</b>	<b>Qualis</b>	<b>Nr of papers</b>	<b>%</b>
A&A	A2	34	23
MNRAS	A2	35	23
ApJ	A1	27	18
PhRvD	A2	10	7
AJ	A2	10	7
PhRvL	A1	1	1
AstL	s/c	1	1
CoPhC	s/c	1	1
JCAP	A1	5	3
PhLB	A2	3	2
Icarus	B1	2	1
GReGr	B2	1	1
AdSpR	s/c	4	3
Aph	B3	1	1
P&SS	s/c	1	1
CeMDA	B4	1	1
ApSS	B4	4	3
RMxAA	B1	1	1
New Astron	B2	2	1
IJMPA	B3	3	2
PASJ	B1	1	1
PASA	s/c	2	2
Ast L	s/c	1	1
PhRvL	A1	1	1
CoPhC	s/c	1	1

Total 148 papers:

83% Qualis A

11% Qualis B

6% Others

**Table 2 - Distribution of the papers published by the INCT-A researchers in 2010, by journal**

<b>Journal</b>	<b>Qualis</b>	<b>Nr of papers</b>	<b>%</b>
A&A	A2	45	25
MNRAS	A2	36	20
ApJ	A1	25	14
PhRvD	A2	13	7
AJ	A2	9	5
JCAP	A1	6	3
Icarus	B1	4	2
IJMPA	B3	8	4
AdSpR	s/c	6	3
APh	B3	2	1
ApSS	B4	5	3
RMxAA	B1	2	1
New Astron	B2	1	1
Nature	A1	1	1
PhLB	A2	2	1
PhRvC	A2	1	
JphCS		2	
IJT		1	
EL		1	
Cos Re		1	
SoPh		1	
JGRE		1	
CQGra		1	
AdAst		1	
AN		1	

Total: 177 papers

78% Qualis A

12% Qualis B

10% Others

**Table 3 - Distribution of the papers published by the INCT-A researchers in 2011, by journal**

<b>Journal</b>	<b>Qualis</b>	<b>Nr of papers</b>	<b>%</b>
A&A	A2	47	23
MNRAS	A2	55	27
ApJ	A1	43	21
PhRvD	A2	7	3
AJ	A2	12	6
JCAP	A1	6	3
Icarus	B1	3	1
IJMPA	B3	2	1
AdSpR	s/c	-	-
Aph	B3	-	-
ApSS	B4	2	1
RMxAA	B1	2	1
New Astron	B2	-	-
Nature	A1	1	
PhLB	A2	1	
PhRvC	A2	-	
JphCS		1	
IJT		-	
EL		-	
Cos Re		-	
SoPh		-	
JGRE		1	
CQGra		1	
AdAst		1	
AN		-	

Total: 202 papers

85% Qualis A  
5% Qualis B  
10% Others

## EVENTS FORESEEN FOR 2012

### A - Science with Gemini and SOAR

**Workshop:**

*3D spectroscopy in Astronomy* – Thaisa Storchi-Bergmann/ Claudia Mendes de Oliveira

In the context of SOAR (SIFS+BTFI) and Gemini (GMOS+NIFS) instrumentation

### B- Virtual Observatory (Bravo) events:

- 1) Advanced scientific computing in Astronomy – Alex Carciofi/ BRAVO 4 day school + workshop for 80/100 people, to be held at UNICSUL
- 2) School + workshop on Virtual Observatories – Alex Carciofi/BRAVO
- 3) Bravo Challenge

### C - J-PAS

*Bi-national scientific event on observational cosmology* – Spain + Brazil  
(Dupke/Laerte/Claudia)

### D – EAD

*Science teachers training in Astronomy*  
Beginning of the second course.

### E - IRGAC-2012

*International Conference on Quantum Theories and Renormalization*  
Illya Shapiro  
Universidade Federal de Juiz de Fora