

## **Marta Burgay's Curriculum Vitae**

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Born in Torino (Italy) on 30/11/1976.

In July 1995 she graduates at the ``Liceo XXVI Febbraio'' in Aosta, specializing in classical studies.

On the 18 of December 2000 she obtains the Laurea degree in Astronomy at the Bologna University, cum laude.

On the first of April 2004 she obtains the PhD in Astronomy at the Bologna University.

Since the 15 of October 2004 she works as researcher at the INAF Cagliari Astronomical Observatory.

She is part of the international group PULSE (Pulsar Science in Europe), winner of the Descartes prize 2005 ``Excellence in scientific collaborative research''.

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### **Prizes:**

- May 2005: Tacchini Prize 2005 of the Italian Astronomical Society (SIAI) for her PhD thesis "The Parkes High-Latitude Pulsar Survey and the Discovery of the First Double Pulsar".
  - January 2006: Descartes Prize 2005 "Excellence in scientific collaborative science" as a member of the international group PULSE (Pulsar Science in Europe).
  - September 2006: young researcher's prize of the Italian Society Italiana of General Relativity and Gravitational Physics (SIGrav).
  - December 2006: International Union for Pure and Applied Physics (IUPAP) prize for young physicists.
  - December 2010: Marsden prize of the European Astroscopy Network.
  - June 2011: Marisa Bellisario prize "Women, innovation and human capital".
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### **Refereed Publications (inverse chronological order):**

1. *The High Time Resolution Universe Pulsar Survey - IV. Discovery and polarimetry of millisecond pulsars*  
Keith, M. J.; Johnston, S.; Bailes, M.; Bates, S. D.; Bhat, N. D. R.; **Burgay, M.**; Burke-Spolaor, S.; D'Amico, N.; Jameson, A.; Kramer, M.; Levin, L.; Milia, S.; Possenti, A.; Stappers, B. W.; van Straten, W.; Parent, D., 2012, MNRAS, 419, 1752
2. *Observations of Energetic High Magnetic Field Pulsars with the Fermi Large Area Telescope*  
Parent, D.; Kerr, M.; den Hartog, P. R.; Baring, M. G.; DeCesar, M. E.; Espinoza, C. M.; Gotthelf, E. V.; Harding, A. K.; Johnston, S.; Kaspi, V. M.; Livingstone, M.; Romani, R. W.; Stappers, B. W.; Watters, K.; Weltevrede, P.; Abdo, A. A.; Burgay, M.; Camilo, F.; Craig, H. A.; Freire, P. C. C.; Giordano, F.; Guillemot, L.; Hobbs, G.; Keith, M.; Kramer, M.; Lyne, A. G.; Manchester, R. N.; Noutsos, A.; Possenti, A.; Smith, D. A., 2011, ApJ, 743, 170
3. *The High Time Resolution Universe Survey - III. Single-pulse searches and preliminary analysis*  
Burke-Spolaor, S.; Bailes, M.; Johnston, S.; Bates, S. D.; Bhat, N. D. R.; **Burgay, M.**; D'Amico,

- N.; Jameson, A.; Keith, M. J.; Kramer, M.; Levin, L.; Milia, S.; Possenti, A.; Stappers, B.; van Straten, W., 2011, MNRAS, 416, 2465
4. *The High Time Resolution Universe Survey II: Discovery of 5 Millisecond Pulsars*  
Bates, S. D.; Bailes, M.; Bhat, N. D. R.; **Burgay, M.**; Burke-Spolaor, S.; D'Amico, N.; Jameson, A.; Johnston, S.; Keith, M. J.; Kramer, M.; Levin, L.; Lyne, A.; Milia, S.; Possenti, A.; Stappers, B.; van Straten, W., 2011, MNRAS, 416, 2455
  5. *Transformation of a Star into a Planet in a Millisecond Pulsar Binary*  
Bailes, M.; Bates, S. D.; Bhalerao, V.; Bhat, N. D. R.; **Burgay, M.**; Burke-Spolaor, S.; D'Amico, N.; Johnston, S.; Keith, M. J.; Kramer, M.; Kulkarni, S. R.; Levin, L.; Lyne, A. G.; Milia, S.; Possenti, A.; Spitler, L.; Stappers, B.; van Straten, W., 2011, Science, 333, 1717
  6. *Long-term spectral and timing properties of the soft gamma-ray repeater SGR 1833-0832 and detection of extended X-ray emission around the radio pulsar PSR B1830-08*  
Esposito, P.; Israel, G. L.; Turolla, R.; Mattana, F.; Tiengo, A.; Possenti, A.; Zane, S.; Rea, N.; **Burgay, M.**; Götz, D.; Mereghetti, S.; Stella, L.; Wieringa, M. H.; Sarkissian, J. M.; Enoto, T.; Romano, P.; Sakamoto, T.; Nakagawa, Y. E.; Makishima, K.; Nakazawa, K.; Nishioka, H.; François-Martin, C., 2011, MNRAS, 416, 205
  7. *Discovery of gamma- and X-ray pulsations from the young and energetic PSR J1357-6429 with Fermi and XMM-Newton*  
Lemoine-Goumard, M.; Zavlin, V. E.; Grondin, M.-H.; Shannon, R.; Smith, D. A.; **Burgay, M.**; Camilo, F.; Cohen-Tanugi, J.; Freire, P. C. C.; Grove, J. E.; Guillemot, L.; Johnston, S.; Keith, M.; Kramer, M.; Manchester, R. N.; Michelson, P. F.; Parent, D.; Possenti, A.; Ray, P. S.; Renaud, M.; Thorsett, S. E.; Weltevrede, P.; Wolff, M. T., 2011, A&A, 533, 102L
  8. *Placing limits on the stochastic gravitational-wave background using European Pulsar Timing Array data*  
van Haasteren, R.; Levin, Y.; Janssen, G. H.; Lazaridis, K.; Stappers, M. Kramer B. W.; Desvignes, G.; Purver, M. B.; Lyne, A. G.; Ferdman, R. D.; Jessner, A.; Cognard, I.; Theureau, G.; D'Amico, N.; Possenti, A.; **Burgay, M.**; Corongiu, A.; Hessels, J. W. T.; Smits, R.; Verbiest, J. P. W., 2011, MNRAS, 414, 3117
  9. *Erratum: The Parkes High-Latitude pulsar survey*  
**Burgay, M.**; Joshi, B. C.; D'Amico, N.; Possenti, A.; Lyne, A. G.; Manchester, R. N.; McLaughlin, M. A.; Kramer, M.; Camilo, F.; Freire, P. C. C., 2011, MNRAS, 412, 2816
  10. *A 6.5-GHz multibeam pulsar survey*  
Bates, S. D.; Johnston, S.; Lorimer, D. R.; Kramer, M.; Possenti, A.; **Burgay, M.**; Stappers, B.; Keith, M. J.; Lyne, A.; Bailes, M.; McLaughlin, M. A.; O'Brien, J. T.; Hobbs, G., 2011, MNRAS, 411, 1575
  11. *Discovery of 59 ms pulsations from 1RXS J141256.0+792204 (Calvera)*  
Zane, S.; Haberl, F.; Israel, G. L.; Pellizzoni, A.; **Burgay, M.**; Mignani, R. P.; Turolla, R.; Possenti, A.; Esposito, P.; Champion, D.; Eatough, R. P.; Barr, E.; Kramer, M., 2011, MNRAS, 410, 2428
  12. *The High Time Resolution Universe Pulsar Survey - I. System configuration and initial discoveries*  
Keith, M. J.; Jameson, A.; van Straten, W.; Bailes, M.; Johnston, S.; Kramer, M.; Possenti, A.; Bates, S. D.; Bhat, N. D. R.; **Burgay, M.**; Burke-Spolaor, S.; D'Amico, N.; Levin, L.; McMahon, Peter L.; Milia, S.; Stappers, B. W., 2010, MNRAS, 409, 619
  13. *AGILE Observations of the "Soft" Gamma-ray Pulsar PSR B1509-58*  
Pilia, M.; Pellizzoni, A.; Trois, A.; Verrecchia, F.; Esposito, P.; Weltevrede, P.; Johnston, S.;

**Burgay, M.**; Possenti, A.; Del Monte, E.; Fuschino, F.; Santolamazza, P.; Chen, A.; Giuliani, A.; Caraveo, P.; Mereghetti, S.; Tavani, M.; Argan, A.; Costa, E.; D'Amico, N.; De Luca, A.; Evangelista, Y.; Feroci, M.; Longo, F.; Marisaldi, M.; Barbiellini, G.; Bulgarelli, A.; Cattaneo, P. W.; Cocco, V.; D'Ammando, F.; De Paris, G.; Di Cocco, G.; Donnarumma, I.; Fiorini, M.; Froyland, T.; Galli, M.; Gianotti, F.; Labanti, C.; Lapshov, I.; Lazzarotto, F.; Lipari, P.; Morselli, A.; Pacciani, L.; Perotti, F.; Piano, G.; Picozza, P.; Prest, M.; Pucella, G.; Rapisarda, M.; Rappoldi, A.; Sabatini, S.; Soffitta, P.; Trifoglio, M.; Vallazza, E.; Vercellone, S.; Vittorini, V.; Zambra, A.; Zanello, D.; Pittori, C.; Lucarelli, F.; Giommi, P.; Salotti, L.; Bignami, G. F., 2010, *ApJ*, 723, 707

14. *The Evolution of PSR J0737-3039B and a Model for Relativistic Spin Precession*  
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15. *Near-infrared observations of rotating radio transients*  
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16. *A Radio-loud Magnetar in X-ray Quiescence*  
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17. *Search for pulsations at high radio frequencies from accreting millisecond X-ray pulsars in quiescence*  
Iacolina, M. N.; **Burgay, M.**; Burderi, L.; Possenti, A.; di Salvo, T., 2010, *A&A*, 519, 13
18. *The European Pulsar Timing Array: current efforts and a LEAP toward the future*  
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19. *The International Pulsar Timing Array project: using pulsars as a gravitational wave detector*  
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20. *Pulsar Timing with the Parkes Radio Telescope for the Fermi Mission*  
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21. *Detection of Gamma-Ray Emission from the Vela Pulsar Wind Nebula with AGILE*  
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22. *Observations and Modeling of Relativistic Spin Precession in PSR J1141-6545*  
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23. *ERRATUM: "New Limits on Radio Emission from X-ray Dim Isolated Neutron Stars"*  
Kondratiev, V. I.; McLaughlin, M. A.; Lorimer, D. R.; **Burgay, M.**; Possenti, A.; Turolla, R.; Popov, S. B.; Zane, S., 2010 *ApJ*, 708, 910
24. *The PULSE@Parkes Project: a New Observing Technique for Long-Term Pulsar Monitoring*  
Hobbs, G.; Hollow, R.; Champion, D.; Khoo, J.; Yardley, D.; Carr, M.; Keith, M.; Jenet, F.; Amy, S.; **Burgay, M.**; Burke-Spolaor, S.; Chapman, J.; Danaia, L.; Homewood, B.; Kovacevic, A.; Mao, M.; McKinnon, D.; Mulcahy, M.; Osłowski, S.; van Straten, W., 2009, *PASA*, 26, 468
25. *Radio Detection of LAT PSRs J1741-2054 and J2032+4127: No Longer Just Gamma-ray Pulsars*  
Camilo, F.; Ray, P. S.; Ransom, S. M.; **Burgay, M.**; Johnson, T. J.; Kerr, M.; Gotthelf, E. V.; Halpern, J. P.; Reynolds, J.; Romani, R. W.; Demorest, P.; Johnston, S.; van Straten, W.; Saz Parkinson, P. M.; Ziegler, M.; Dormody, M.; Thompson, D. J.; Smith, D. A.; Harding, A. K.; Abdo, A. A.; Crawford, F.; Freire, P. C. C.; Keith, M.; Kramer, M.; Roberts, M. S. E.; Weltevrede, P.; Wood, K. S., 2009, *ApJ*, 705, 1
26. *Spin-down rate and inferred dipole magnetic field of the soft gamma-ray repeater SGR1627-41*  
Esposito, P.; **Burgay, M.**; Possenti, A.; Turolla, R.; Zane, S.; de Luca, A.; Tiengo, A.; Israel, G. L.; Mattana, F.; Mereghetti, S.; Bailes, M.; Romano, P.; Götz, D.; Rea, N., 2009, *MNRAS*, 399L, 44
27. *Discovery of Extended X-Ray Emission Around the Highly Magnetic RRAT J1819-1458*  
Rea, N.; McLaughlin, M. A.; Gaensler, B. M.; Slane, P. O.; Stella, L.; Reynolds, S. P.; **Burgay, M.**; Israel, G. L.; Possenti, A.; Chatterjee, S., 2009, *ApJ*, 703L, 41
28. *New Limits on Radio Emission from X-ray Dim Isolated Neutron Stars*  
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29. *Discovery of New Gamma-Ray Pulsars with AGILE*  
Pellizzoni, A.; Pilia, M.; Possenti, A.; Chen, A.; Giuliani, A.; Trois, A.; Caraveo, P.; Del Monte, E.; Fornari, F.; Fuschino, F.; Mereghetti, S.; Tavani, M.; Argan, A.; **Burgay, M.**; Cognard, I.; Corongiu, A.; Costa, E.; D'Amico, N.; De Luca, A.; Esposito, P.; Evangelista, Y.; Feroci, M.; Johnston, S.; Kramer, M.; Longo, F.; Marisaldi, M.; Theureau, G.; Weltevrede, P.; Barbiellini, G.; Boffelli, F.; Bulgarelli, A.; Cattaneo, P. W.; Cocco, V.; D'Ammando, F.; DeParis, G.; Di Cocco, G.; Donnarumma, I.; Fiorini, M.; Froyland, T.; Galli, M.; Gianotti, F.; Labanti, C.; Lapshov, I.; Lazzarotto, F.; Lipari, P.; Mineo, T.; Morselli, A.; Pacciani, L.; Perotti, F.; Piano, G.; Picozza, P.; Prest, M.; Pucella, G.; Rapisarda, M.; Rappoldi, A.; Sabatini, S.; Soffitta, P.; Trifoglio, M.; Vallazza, E.; Vercellone, S.; Vittorini, V.; Zambra, A.; Zanello, D.; Pittori, C.; Verrecchia, F.; Preger, B.; Santolamazza, P.; Giommi, P.; Salotti, L.; Bignami, G. F., 2009, *ApJ*, 695L, 115

30. *Searching for pulsed emission from XTE J0929-314 at high radio frequencies*  
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31. *High-Resolution Timing Observations of Spin-Powered Pulsars with the AGILE Gamma-Ray Telescope*  
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32. *PSR J1410-6132: A young, energetic pulsar associated with EGRET source 3EG J1410-6147*  
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33. *The very soft X-ray spectrum of the Double Pulsar System J0737-3039*  
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34. *Accurate X-ray position and multiwavelength observations of the isolated neutron star RBS1774*  
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35. *Age constraints in the double pulsar system J0737-3039*  
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36. *Search for radio pulsations in four anomalous X-ray pulsars and discovery of two new pulsars*  
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37. *Chandra smells a RRAT: X-ray Detection of a Rotating Radio Transient*  
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38. *Arecibo and the ALFA Pulsar Survey*  
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39. *Tests of General Relativity from Timing the Double Pulsar*  
M. Kramer, I. H. Stairs, R. N. Manchester, M. A. McLaughlin, A. G. Lyne, R. D. Ferdman, **M. Burgay**, D. R. Lorimer, A. Possenti, N. D'Amico, J. M. Sarkissian, G. B. Hobbs, J. E. Reynolds, P. C. C. Freire, F. Camilo 2006, *Science*, 314, 97

40. *The Parkes Multibeam Pulsar Survey - VI. Discovery and timing of 142 pulsars and a Galactic population analysis*  
D. R. Lorimer, A. J. Faulkner, A. G. Lyne, R. N. Manchester, M. Kramer, M. A. McLaughlin, G. B. Hobbs, A. Possenti, I. H. Stairs, F. Camilo, **M. Burgay**, N. D'Amico, A. Corongiu, F. Crawford, 2006, MNRAS, 372, 777
41. *Search for radio pulsations in four Anomalous X-ray Pulsars and discovery of two new pulsars*  
**M. Burgay**, N. Rea, G. L. Israel, A. Possenti, L. Burderi, T. di Salvo, N. D'Amico, L. Stella, 2006, MNRAS, 372, 410
42. *The Parkes High-Latitude Pulsar Survey*  
**M. Burgay**, B. C. Joshi, , N. D'Amico, A. Possenti, A. G. Lyne, R. N. Manchester, M. A. McLaughlin, M. Kramer, F. Camilo, P. C. C. Freire 2006, MNRAS, 368, 283
43. *Arecibo Pulsar Survey Using ALFA. II. The young, highly relativistic binary pulsar J1906+0746*  
D. R. Lorimer, I. H. Stairs, P. C. C. Freire, J. M. Cordes, F. Camilo, A. J. Faulkner, A. G. Lyne, D. J. Nice, S. M. Ransom, Z. Arzoumanian, R. N. Manchester, D. J. Champion, J. van Leeuwen, M. A. McLaughlin, R. Ramachandran, J. W. T. Hessels, W. Vlemmings, A. A. Deshpande, N. D. R. Bhat, S. Chatterjee, J. L. Han, B. M. Gaensler, L. Kasian, J. S. Deneva, B. Reid, T. J. W. Lazio, V. M. Kaspi, F. Crawford, A. N. Lommen, D. C. Backer, M. Kramer, B. W. Stappers, G. B. Hobbs, A. Possenti, N. D'Amico, **M. Burgay** 2006, ApJ, 640, 428
44. *Discovery of the X-Ray Counterpart to the Rotating Radio Transient J1819-1458*  
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45. *Transient radio bursts from rotating neutron stars*  
M. A. McLaughlin, A. G. Lyne, D. R. Lorimer, M. Kramer, A. J. Faulkner, R. N. Manchester, J. M. Cordes, F. Camilo, A. Possenti, I. H. Stairs, G. Hobbs, N. D'Amico, **M. Burgay**, J. T. O'Brien 2006, Nature, 439, 817
46. *Strong-field tests of gravity with the double pulsar*  
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47. *Discovery of Three Wide-Orbit Binaries: Implications for Binary Evolution and Equivalence Principles*  
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43. *Search for Millisecond Pulsar in Soft X-ray Transients*  
**M. Burgay**, L. Burderi, N. D'Amico, A. Possenti, 2003, in ``Pulsar, AXP and SGRs with BeppoSAX''
44. *Radio ejection in the evolution of X-ray binaries: the bridge between low mass X-ray binaries and millisecond pulsars*  
L. Burderi, F. D'Antona, T. Di Salvo, **M. Burgay**, 2002, XXII Moriond Astrophysics Meeting "The Gamma-Ray Universe"
45. *A radio pulsar phase in accreting X-ray binaries: limited mass transfer and spin-up of the neutron star*  
L. Burderi, F. D'Antona, M.T. Menna, R. Iaria, N.R. Robba, A. Possenti, N. D'Amico, **M. Burgay**, 2001, ASP Conf. Procs. Vol 234
46. *Where Have All the Submillisecond Pulsars Gone?*  
L. Burderi, F. D'Antona, M.T. Menna, L. Stella, A. Possenti, N. D'Amico, **M. Burgay**, T. Di Salvo, R. Iaria, N.R. Robba, S. Campana, 2000, ASP Conf. Procs. - Bormio, Italy

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## **Theses:**

T1 - Laurea thesis in Astronomy: *Search for millisecond radio pulsars in Soft X-ray Transients* (in Italian), 2000. Supervisor: prof. Roberto Fanti; co-supervisors.: prof. Nichi D'Amico, dott. Andrea Possenti.

T2 - OhD thesis in Astronomy: *The Parkes High-Latitude Pulsar Survey and the Discovery of the First Double Pulsar*, 2004. Supervisor: prof. Roberto Fanti; co-supervisors.: prof. Nichi D'Amico, dott. Andrea Possenti, prof. Andrew Lyne. This thesis received the 2005 Tacchini Prize of the Italian Astronomical Society.

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## **Theses Supervised:**

### 4 years' Laurea

- Fabio Schirru: Timing of millisecond pulsars in NGC6441 and NGC 6266 (AA 2003-2004, Università di Cagliari)
- Emanuela Sanna: Ricerca di pulsar nel braccio di Perseo della Via Lattea (AA 2004-2005, Università di Cagliari)
- Noemi Iacolina: Ricerca di pulsazioni radio coerenti dalla pulsar X al millisecondo J0929-314(AA 2005-2006, Università di Cagliari)
- Marco Pierbattista: Implementazione di codici di ricerca di pulsar su sistemi multiprocessore(AA 2005-2006, Università di Bologna)
- Manuel Floris: Ricerca di Pulsar con la Perseus Arm Multibeam Survey (AA 2006-2007, Università di Cagliari)

### 3 years' Laurea

- Maura Pilia: Dedispersion and folding of radiopulsar data: the case of PSRJ1803-3002 in NGC6522 (AA 2004-2005, Università di Cagliari)

### specialistic Laurea

- Matteo Bachetti: Software per la ricerca di pulsar in sistemi binari stretti (AA 2005-2006, Università di Cagliari)
- Maura Pilia: Timing di Pulsar Gamma Osservate da AGILE con i Radiotelescopi dell'EPTA (AA 2006-2007, Università di Cagliari)

### PhD

- Maria Noemi Iacolina: Accreting millisecond X-ray pulsars: a search for pulsed radio emission and constraints from the radio-ejection mechanism (AA 2007-2009, Università di Cagliari)
  - Mark Purver: High-precision pulsar timing: the stability of integrated pulse profiles and their representation by analytic templates (AA 2007-2010 University of Manchester; external examiner)
  - Sabrina Milia: Searching for Millisecond Pulsars for Timing Arrays in the HiTRUn Survey (AA 2009-2011, Università di Cagliari)
-

**Talks (C=conferences S=seminars L=lectures O=outreach):**

- *Update on the HiTRUn survey for pulsars: the diamond planet and other discoveries*, VII Congresso nazionale Oggetti Compatti, Bormio, 13-16 December 2011(C)
- *The High Time Resolution Universe Pulsar Survey: the diamond planet and other discoveries*, Osservatorio Astronomico di Brera, 12 December 2011(S)
- *The Double Pulsar System in its 8th anniversary*, Science with Parkes @ 50 Years Young. Parkes, NSW, Australia, 31 October-4 November 2011(C)
- *Radio instruments/detectors for high-time resolution astrophysics*HTRA Summer School: Principles of Multi-wavelength High Time Resolution Astrophysics, Santa Margherita di Pula, 10-15 October 2011(L)
- *112 anni di Astronomia e Radioastronomia in Sardegna: dagli albori al presente*, (with Andrea Possenti, Angelo Poma e Alberto Pellizzoni), at the scientific 'Liceo' Pacinotti in Cagliari, 14 April 2011 (O)
- *The double pulsar: a unique testbed for relativistic gravity*, Mini-workshop "Physics of Neutron Stars as Gravitational Wave Sources" during GWDAAW 14, Roma, 25 January 2010 (C)
- *La Doppia Pulsar: un orologio cosmico nelle pieghe dello spazio-tempo*, at the San Giovanni in Persiceto (BO) planetarium, 18 December 2009 (O)
- *The Double Pulsar system J0737-3039, a unique laboratory to test general relativity*, at Innsbruck University, 24 November 2009 (S)
- *Radio observations of "gamma-ray only" rotation-powered pulsars*, VI Congresso Nazionale Oggetti Compatti, Santa Margherita di Pula, 22-25 September 2009 (C)
- *Pulsars and double-pulsars: a multiwavelength approach*, invited talk at "X-ray astronomy 2009: present status, multi-wavelength approach and future perspectives", Bologna, 7-11 September 2009 (C)
- *The Double Pulsar System J0737-3039A/B*, invited talk at the International Workshop "Pulsars in their diversity", Marciana Marina, 15-18 June 2009 (C)
- *L'osservatorio al femminile*, (with Paola Castangia e Silvia Casu), at the Bastione di San Remy, Cagliari, 3 June 2009 (O)
- *(Pulsars with) The Sardinia Radio Telescope*, colloquium at the Australia Telescope National Facility in Marsfield, Sydney, 11 March 2009 (S)
- *On the debated nature of Rotating Radio Transients (RRATs)*, at the INAF-Osservatorio Astrofisico di Arcetri, 15 May 2008 (S)
- *La doppia pulsar J0737-3039: un laboratorio unico per testare la relatività generale*, at Roma III, 4 March 2008 (S)
- *On the nature of Rotating Radio Transient*, at INAF-Istituto di Radioastronomia di Bologna, 28 January 2008 (S)
- *On the debated nature of Rotating Radio Transients (RRATs)*, at National Center for Radio Astrophysics del Tata Institute of Fundamental Research di Pune, India, 25 June 2007 (S)
- *La Pulsar doppia: un orologio cosmico per sondare lo spazio-tempo*, (with Andrea Possenti) at Forte di Bard (AO), 1 June 2007 (O)

- *La Pulsar doppia: un orologio cosmico per sondare lo spazio-tempo*, (with Andrea Possenti) at Maison Brull di Introd (AO), 1 June 2007 (O)
- *The Perseus Arm Pulsar Survey*, Pulsar Searching and Thai-ming, Krabi, 28 March - 4 April 2007 (C)
- *Orbital and Secular Changes in J0737-3039 system*, talk for the awarding of the IUPAP Young Physicists Prize in Astronomy; XXIII Texas Symposium on Relativistic Astrophysics, Melbourne, 11-15 December 2006 (C)
- *The Double Pulsar J0737-3039A/B as a test-bed of relativistic gravity*, talk for the awarding of the SIGRAV prize, Torino, 4 September 2006 (C)
- *The Double Pulsar J0737-3039A/B*, IAU XXVI General Assembly, Prague, 14-25 August 2006 (C)
- *On the debated nature of Rotating Radio Transients*, The Multicoloured Landscape of Compact Objects and their Explosive Origins, Cefalù, 19-23 June 2006 (C)
- *The Double Pulsar J0737-3039A/B as a test-bed of relativistic gravity*, at the Space Research on the Netherlands (SRON) Institute di Utrecht, NL, 21 April 2006 (S)
- *The Double Pulsar J0737-3039A/B as a test-bed of relativistic gravity*, at INAF-Osservatorio Astronomico di Roma, Monte Porzio Catone, 14 March 2006 (S)
- *The Double Pulsar J0737-3039A/B two years later*, 4.o Congresso Nazionale Oggetti Compatti, Padova, 23-25 November 2005 (C)
- *The Double Pulsar J0737-3039A/B*, XXVIII Spanish Relativity Meeting, Oviedo, 6-10 September 2005 (C)
- *La doppia pulsar J0737-3039*, XLIX Congresso della Società Astronomica Italiana, Catania, 2-7 May 2005 (C)
- *The Double Pulsar System J0737-3039: News and Views*, Interacting Binaries, Cefalù, 4-10 July 2004 (C)
- *La pulsar PSR J0737-3039A, scoperta e implicazioni*, at La Sapienza University, Roma, January 2004
- *PSR J0737-3039: discovery and first implications*, Aspen, 11-17 January 2004 (C)
- *The most beautiful binary pulsar in the world*, III Congresso Nazionale Oggetti Compatti, Monte Porzio Catone, 9-11 December 2003 (C)
- *La pulsar J0737-3039, scoperta e implicazioni*, (con Andrea Possenti e Nichi D'Amico) at the physics department of the Cagliari University, 4 December 2003 (O)
- *A Search for Millisecond Pulsars in Soft X-ray Transients*, Pulsars, AXPs and SGRs observed with BeppoSAX and other observatories, Marsala 23-25 September 2002 (C)
- *Search for Millisecond Pulsars in Soft X-ray Transients*, II Congresso Nazionale Oggetti Compatti, Bologna, 19-21 September 2001 (C)

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#### **Conferences:**

- "7o Congresso Nazionale Oggetti Compatti", Bormio, 13-16 December 2011

- *"Science with Parkes @ 50 Years Young"* Parkes, NSW, Australia, 31 October-4 November 2011
- *"7th EPTA meeting"* Amsterdam, 26-29 April 2011
- *"Bridging electromagnetic astrophysics and cosmology with gravitational waves"*, Milano, 28-30 March 2011
- *"Radio pulsars: An astrophysical key to unlock the secrets of the Universe"*, Chia (CA), 10-15 October 2010 (LOC)
- *"1st Sant Cugat Forum on Astrophysics: The high-energy emission from pulsars and their systems"*, San Cugat (Spagna), 12-16 April 2010
- *"Physics of Neutron Stars as Gravitational Wave Sources"* (preconference of the 14th GWDAA), Roma, 25 January 2010 (invited)
- *"6o Congresso Nazionale Oggetti Compatti"*, Santa Margherita di Pula, 22-25 September 2009 (LOC)
- *"X-ray Astronomy 2009: present status, multi-wavelength approach and future perspectives"*, Bologna 6-11 September 2009 (invited)
- *"6th EPTA meeting"* Besancon, 19-23 October 2009
- *"Pulsars in their diversity"*, Marciana Marina, 15-18 June 2009 (invited)
- *"5th EPTA meeting"*, Dwingeloo, 16-17 March 2009
- *"4th EPTA meeting"*, Manchester, 24-26 September 2008
- *"A Decade of Accreting Millisecond X-Ray Pulsars"*, Amsterdam, 14-18 April 2008
- *"3rd EPTA meeting"*, Bad Honnef 14-16 January 2008
- *"2nd EPTA meeting"*, Poggio dei Pini (CA), 16-18 May 2007
- *"Pulsar Searching and Thai-ming - SKA 2007"* Krabi (Thailand), 28 March-6 April 2007 (invited)
- *"XXIII Texas Symposium on Relativistic Astrophysics"* Melbourne, 11-15 December 2006 (awarded)
- *"1st EPTA meeting"*, Parigi, 26-27 October 2006
- *"XVII SIGRAV Conference"* Torino, 4-7 September 2006 (awarded)
- *"IAU XXVI General Assembly"* Praga, 14-25 August 2006 (invited)
- *"The Multicoloured Landscape of Compact Objects and their Explosive Origins"* Cefalù, 19-24 June 2006 (solicited)
- *"Isolated Neutron Stars"*, Londra, 24-28 April 2006
- *"4.o Congresso Nazionale Oggetti Compatti"*, Padova, 23-25 November 2005 (invited)
- *"XXVIII Spanish Relativity Meeting"*, Oviedo, 6-10 September 2005
- *"XLIX Congresso della Società Astronomica Italiana"*, Catania, 2-7 May 2005 (invited)

- "VIRGO-EGO Scientific Forum", Pisa, 9-10 December 2004
  - "Interacting Binaries: Accretion, Evolution & Outcomes", Cefalù, 4-10 July 2004 (invited)
  - "Binary Radio Pulsars", Aspen, 11-17 January 2004 (invited)
  - "3.o Congresso Nazionale Oggetti Compatti", Monte Porzio Catone, 9-11 December 2003
  - XXVth IAU General Assembly, Sydney, 13-26 July 2003
  - "Pulsar, AXPs and SGRs with observed with BeppoSax and other observatories", Marsala, 23-25 September 2002
  - "Pulsar: Crete 2002", Chania, 26-29 August 2002
  - "2.o Congresso Nazionale Oggetti Compatti", Bologna, 19-21 September 2001
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#### **Schools attended:**

- SIGRAV graduate school in contemporary relativity and gravitational physics VII, "gravity: where do we stand?", Como, 11-15 May 2009
  - Single Dish Summer School, Arecibo, 10-17 July 2005
  - National Astrophysics School, "Astrofisica del Mezzo Interstellare - Oggetti compatti e pulsar", Costa Rey (CA), 27 September-3 October 2003
  - National Astrophysics School, "Cosmologia - Astrofisica relativistica", Asiago, 8-14 September 2002
  - National Astrophysics School, "Chemical evolution of galaxies - High Resolution Spectroscopy and the Cosmic Evolution", Trieste, 15-19 October 2001
  - National Astrophysics School, "Corpi minori del sistema solare - Struttura, evoluzione e variabilità stellare", Sirolo (AN), 21-25 May 2001
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#### **Teaching duties and other assignments:**

- Member of the committee for the selection of the PRIN-INAF 2011 projects
- Member of the Scientific committee of the Fondazione Clément Fillietroz, operating the Astronomical Observatory of the Aosta Valley and the Lignan Planetarium, since 2008
- Member of the Local Organising Committee and lecturer at the HTRA Autumn School "Principles of Multi-wavelength High Time Resolution Astrophysics", Santa Margherita di Pula (CA), 10-15 October 2011
- Member of the Local Organising Committee and lecturer at the First Sardinian Summer School in Astrophysics "Single-dish Radio Astronomy and Radio-Science", Santa Margherita di Pula (CA), 12-17 September 2011
- Lecturer of the course "Astronomy techniques" at the physics department of the Cagliari University for the year 2007-2008
- Member of the Time Allocation Committee for the INAF-IRA radio telescopes in 2009-2010
- Co-chair of the Local Organising committee and editor of the conference proceedings of the

international conference "Radio pulsars: an astrophysical key to unlock the secrets of the universe", Chia (CA), 10-15 October 2010

- Member of the Local Organising Committee of the national school in Astrophysics IX cycle, I course: "Oggetti compatti e pulsar - Scienza con ALMA" Maracalagonis (CA), 20 - 26 May 2007

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***Periods of work/observations abroad:***

- *Parkes Radiotelescope (New South Wales, Australia):* June 2001, December 2001, May 2002, July 2002, April-May 2003, February-March 2004, August 2004, August 2005, December 2005, September-October 2006, February-March 2007, June 2008, August 2009, May 2010, January 2011, August 2011, October 2011
- *Jodrell Bank Observatory (Manchester, UK):* April 2001, February 2002, December 2002.
- *NCRA-TIFR, Pune University, (India)* June 2007

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***Foreigner languages:***

- Fluent English
- Fluent French

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***Computer skills:***

- Good experience on machines using operating systems UNIX, LINUX, MAC, WINDOWS, VAX/VMS and DOS
- Frequent activity on informatic nets and use of the related protocols and languages: SSH, FTP, HTTP, HTML
- Good knowledge of the programming languages FORTRAN 77, F90, perl e csh.

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***Main field of interest:***

*Multifrequency observations of Neutron Stars*

- Radio observations of transient X-ray sources: starting from the 'Laurea' thesis, she was involved in an extensive program of observations that included several Soft X-ray Transients, in order to reveal radio pulsations during quiescence. The observations were made from 1998 to 2004 at the Parkes radio telescope (NSW, Australia) and Arecibo (Puerto Rico).
- Multifrequency observations of Rotating Radio Transients (RRATs): the RRATs are a class of transient radio emitters recently discovered. In order to understand their nature a campaign of multifrequency observations, which already led to the detection of the first X-ray counterpart to a RRAT (Reynolds et al. 2006), has been undertaken.
- Radio observations of isolated neutron stars: in order to establish a connection between different classes of neutron stars (particularly among the new class of RRATs, magnetars and other types of isolated neutron stars) the undersigned is involved in a campaign of observations of neutron stars (including Anomalous X-ray Pulsars, Soft Gamma-ray Repeaters, X-ray Dim Isolated Neutron Stars and Central Compact Objects) in the radio band. The aim is to search for pulsed emission, transient or persistent. Observations are conducted

at some of the largest radio telescopes in the world (Green Bank Telescope, WV, USA for the northern hemisphere and Parkes, NSW, Australia for the southern).

### *Radio Pulsar Surveys and Relativistic Binaries*

- Since 2001 the undersigned deals with acquisition and data reduction of surveys in the radio band in search of pulsars and in particular of millisecond pulsars. The Parkes High Latitude Pulsar Survey (Burgay et al. 2006), concluded in 2004, has led to the discovery of 18 new pulsars. Four of these belong to the class of millisecond pulsars and three are included in a binary system. Of particular interest is the relativistic binary J0737-3039 (Burgay et al. 2003, Nature; Lyne et al. 2004, Science) consisting of two neutron stars both observed as a radio pulsars. The study of this object, with its many peculiarities, has many physical and astrophysical applications, in particular in the field of General Relativity, in that of gravity wave detection and in plasma physics. Since 2008, the undersigned is part of the High Time Resolution Universe Survey for pulsars and transients thanks to which more than 100 new pulsars, a fourth of which belong to the class of the milliseconds pulsars (at February 2012) have been discovered.

### *Pulsar Timing Array for the detection of gravitational waves*

- Since 2006, the undersigned is part of the European Pulsar Timing Array (EPTA), a collaboration between astronomers from different European nations whose purpose is to detect gravitational waves using the technique of the precision timing of a set of pulsars observed with a network of radio telescopes scattered throughout Europe. The gravitational signal produced by the sum of primordial black hole mergers at the center of galaxies, should in fact affect the time of arrival of the pulses of pulsars scattered in the sky, in a correlated manner. The Timing Array experiments, by means of the precise monitoring of a large number of pulsars, therefore, aim to measure this correlation and to disclose directly for the first time gravitational waves. In order to have high precision measurements of pulse times of arrival, the EPTA has now embarked on the project LEAP (Large European Array for Pulsars) which has the aim to combine the signals recorded by the various telescopes of the EPTA collaboration to obtain the equivalent of a telescope of 300 meters in diameter.

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Marta Burgay 06-02-2012