

Dr Juan Antonio Valiente Kroon

List of publications

December 2011

Preprints

1. D Pugliese & JA Valiente Kroon. *On the evolution equations for ideal magnetohydrodynamics in curved spacetime*. Available at arXiv:1112.1525[gr-qc]. Submitted to Phys. Rev. D.
2. T Bäckdahl & JA Valiente Kroon. *Constructing “non-Kerness” on compact domains*. Available at arXiv:1111.6019[gr-qc]. Submitted to J. Math. Phys.
3. C Lübbe & JA Valiente Kroon. *A conformal approach for the analysis of the non-linear stability of pure radiation cosmologies*. Available at arXiv:1111.4691[gr-qc]. Submitted to Ann. Phys.
4. A Alho, F C Mena & JA Valiente Kroon. *The Einstein-Klein-Gordon-Friedrich system and the non-linear stability of scalar field cosmologies*. Available at arXiv:1006.3778[gr-qc]. Submitted to J. Math. Phys.

Articles in press

5. C Lübbe & JA Valiente Kroon. *The extended Conformal Einstein field equations with matter: the Einstein-Maxwell field*. J. Geom. Phys. Available at arXiv:1102.2399[gr-qc].

Chapters in books

6. JA Valiente Kroon. *Polyhomogeneous expansions near spacelike and null infinity*. In *The Conformal Structure of Spacetimes. Geometry, Analysis, Numerics*. Chapter 7, pp 135-160. J Frauendiener & H Friedrich eds. Springer Verlag (2002). Also at gr-qc/0202001.

Review articles

7. JL Jaramillo, JA Valiente Kroon & Eourgoulhon. *From Geometry to Numerics: interdisciplinary aspects in mathematical and numerical relativity*. Class. Quantum Grav. **25**, 093001-1 to 66 (2008). Also available at arXiv:0712.2332[gr-qc].

Articles in peer reviewed journals

8. AE Aceña & JA Valiente Kroon. *Conformal extensions for stationary spacetimes*. Class. Quantum Grav. **28**, 225023 1-37 (2011). Available at arXiv:1103.0387[gr-qc].
9. JA Valiente Kroon. *Asymptotic simplicity and static data*. Ann. Henri Poincaré. Springer Online First. Available at arXiv:1011.6600[gr-qc].
10. T Bäckdahl & JA Valiente Kroon. *The “non-Kerness” of domains of outer communication of black holes and exteriors of stars*. Proc. R. Soc. Lond. A **467**, 1701-1718 (2011). Also available at arXiv:1010.2421[gr-qc].
11. T Bäckdahl & JA Valiente Kroon. *Approximate twistors and positive mass*. Class. Quantum Grav. **28**, 075010 1-19 (2011). Also available at arXiv:1011.3712 [gr-qc].
12. T Bäckdahl & JA Valiente Kroon. *On the construction of a geometric invariant measuring the deviation from Kerr data*. Ann. Henri Poincaré **11**, 1225-1271 (2010). Available at arXiv:1005.0743[gr-qc].
13. C Lübbe & JA Valiente Kroon. *A stability result for purely radiative spacetimes*. J. Hyp. Diff. Eqns. **7**, 545-579 (2010). Available at arXiv:0910.4073[gr-qc].

14. JA Valiente Kroon. *A rigidity property of asymptotically simple space-times arising from conformally flat data*. *Comm. Math. Phys.* **298**, 673-706 (2010). Available at arXiv:0906.4714[gr-qc].
15. T Bäckdahl & JA Valiente Kroon. *A geometric invariant measuring the deviation from Kerr data*. *Phys. Rev. Lett.* **104**, 231102 (2010). Available at arXiv:1001.4492[gr-qc].
16. J A Valiente Kroon. *Regularity conditions at spatial infinity revisited*. *Ann. Henri Poincaré* **10**, 623-671 (2009). Also available at arXiv:0807.2507[gr-qc].
17. C Lübbe & JA Valiente Kroon. *On de Sitter-like and Minkowski-like spacetimes*. *Class. Quantum Grav.* **26**, 145012 1 to 26 (2009). Also available at arXiv:0903.3899[gr-qc].
18. JA Valiente Kroon. *Estimates for the Maxwell field near the spatial and null infinity of the Schwarzschild spacetime*. *J. Hyp. Diff. Eqns.* **6**, 229- 268 (2009). Available at arXiv:0802.4145[gr-qc].
19. A García-Parrado Gómez-Lobo & JA Valiente Kroon. *Kerr initial data*. *Class. Quantum Grav.* **25**, 205018 1-19 (2008). Also available at arXiv:0805.4505[gr-qc].
20. A García-Parrado Gómez-Lobo & JA Valiente Kroon. *Killing spinor initial data*. *J. Geom. Phys.* **58**, 1186-1202 (2008). Also at arXiv:0712.3373[gr-qc].
21. JA Valiente Kroon. *The Maxwell field on the Schwarzschild spacetime: behaviour near spatial infinity*. *Proc. Roy. Soc. Lond. A* **463**, 2609-2630 (2007). Also at gr-qc/0703147.
22. JA Valiente Kroon. *Asymptotic properties of the development of conformally flat data near spatial infinity*. *Class. Quantum Grav.* **24**, 3037-3054 (2007). Also at gr-qc/0701166.
23. A García-Parrado Gómez-Lobo & JA Valiente Kroon. *Initial data for the Schwarzschild spacetime*. *Phys. Rev. D.* **75**, 024027/1-14 (2007). Also at gr-qc/0609100.
24. JA Valiente Kroon. *On smoothness asymmetric null infinities*. *Class. Quantum Grav.* **23**, 3593-3606 (2006). Also at gr-qc/0605056.
25. JA Valiente Kroon. *Characterization of Schwarzschild initial data*. *Phys. Rev. D* **72**, 084003/1-11 (2005). Also at gr-qc/0504003.
26. JA Valiente Kroon. *Time asymmetric spacetimes near null and spatial infinity. II. Expansions of developments of initial data sets with non- smooth conformal metrics*. *Class. Quantum Grav.* **22**, 1683-1707 (2005). Also at gr-qc/0412045.
27. JA Valiente Kroon. *Time asymmetric expansions near null and spatial infinity. I. Expansions of developments of conformally flat data*. *Class. Quantum Grav.* **22**, 5457-5493 (2004). Also at gr-qc/0408062.
28. JA Valiente Kroon. *Does asymptotic simplicity allow for radiation near spatial infinity?* *Comm. Math. Phys* **251**, 211-234 (2004). Also at gr-qc/0309016.
29. JA Valiente Kroon. *Asymptotic expansions of the Cotton-York tensor on slices of stationary spacetimes*. *Class. Quantum Grav.* **21**, 3237-3249 (2004). Also at gr-qc/0402033.
30. JA Valiente Kroon. *On the nonexistence of conformally flat slices in the Kerr and other stationary spacetimes*. *Phys. Rev. Lett* **92**, 041101/1-4 (2004). Also at gr-qc/0310048.
31. JA Valiente Kroon. *A new class of obstructions to the smoothness of null infinity*. *Comm. Math. Phys.* **244**, 133-156 (2004). Also at gr-qc/0211024.
32. R Lazkoz & JA Valiente Kroon. *The Newtonian limit of spacetimes describing uniformly accelerated particles*. *Proc. Roy. Soc. Lond. A.* **460**, 995-1016 (2004). Also at gr-qc/0208074.
33. JA Valiente Kroon. *Early radiative properties of the developments of time symmetric, conformally flat initial data*. *Class. Quantum Grav.* **20**, L53-60 (2003). Also at gr-qc/0206050.
34. S Dain & JA Valiente Kroon. *Conserved quantities in a black hole collision*. *Class. Quantum Grav.* **19**, 811-816 (2002). Also at gr-qc/0105109.
35. JA Valiente Kroon. *Can one detect a non-smooth null infinity?* *Class. Quantum Grav.* **18**, 4311-4316 (2001). Also at gr-qc/0108049.
36. JA Valiente Kroon. *On the existence and convergence of polyhomogeneous expansions of zero-rest-mass fields*. *Class. Quantum Grav.* **17**, 4365-4376 (2000). Also at gr-qc/0005087.

37. R Lazkoz & JA Valiente Kroon. *Boost-rotation symmetric type D radiative metrics in Bondi coordinates*. Phys. Rev D **62** 084033/1-10 (2000). Also at gr-qc/0003050.
38. JA Valiente Kroon. *Polyhomogeneity and zero-rest-mass fields with applications to Newman-Penrose constants*. Class. Quantum Grav. **17**, 605-621 (2000). Also at gr-qc/9907097.
39. JA Valiente Kroon. *On Killing vector fields and Newman-Penrose constants*. J. Math. Phys. **41**, 898-923 (2000). Also at gr-qc/9903093.
40. JA Valiente Kroon. *A Comment on the Outgoing Radiation Condition and the Peeling Theorem*. Gen. Rel. Grav. **31**, 1219-1224 (1999). Also at gr-qc/9811034.
41. JA Valiente Kroon. *Logarithmic Newman-Penrose constants for arbitrary polyhomogeneous spacetimes*. Class. Quantum Grav. **16**, 1653-1665 (1999). Also at gr-qc/9812004.
42. J A Valiente Kroon. *Conserved Quantities for polyhomogeneous space-times*. Class. Quantum Grav. **15**, 2479-2491 (1998). Also at gr-qc/9805094.

Conference proceedings

43. A Alho, FC Mena & JA Valiente Kroon. *On the non-linear stability of scalar field cosmologies*. J. Phys.: Conf. Ser. **314**, 012099/1-4 (2011). Proceedings of the Spanish Relativity Meeting 2010.
44. JA Valiente Kroon. *Geometric invariants for initial data sets: analysis, exact solutions, computer algebra, numerics*. J. Phys.: Conf. Ser. **314**, 012016/1-8 (2011). Proceedings of the Spanish Relativity Meeting 2010.
45. A García-Parrado Gómez-Lobo & JA Valiente Kroon. *Kerr initial data*. In the proceedings of the Spanish Relativity Meeting 2008. AIP Conf. Proc. **1122**, 276-279 (2009).
46. R Lazkoz & JA Valiente Kroon. *The Newtonian limit of spacetimes describing uniformly accelerated particles*. Proceedings of the 10th Marcel Grossmann Meeting on General Relativity. M Novello, S Perez-Bergliaffa and R Ruffini editors. Part C, 1953-1956. World Scientific (2005).
47. JA Valiente Kroon. *A new class of obstructions to the smoothness of null infinity*. Proceedings of the 10th Marcel Grossmann Meeting on General Relativity. M. Novello, S. Perez-Bergliaffa and R. Ruffini editors. Part C, 1838-1841. World Scientific (2005).
48. JA Valiente Kroon. *The smoothness of null infinity: its relevance for numerical relativity*. Proceedings of the 10th Marcel Grossmann Meeting on General Relativity. M Novello, S Perez-Bergliaffa and R Ruffini editors. Part C, 1613-1615. World Scientific (2005).
49. R Lazkoz & JA Valiente Kroon. *The Newtonian limit of boost-rotation symmetric spacetimes*. in Gravitation and Cosmology, Proceedings of the Spanish Relativity Meeting, Maó, Spain, 2002. pp 267-271. Eds. A Lobo, F Fayos, J Garriga, E Gaztañaga, E Verdaquer, Publicacions de la Universitat de Barcelona (2003).
50. R Lazkoz & J A Valiente Kroon. *On radiative properties of boost-rotation symmetric type D spacetimes*. In *Reference Frames and Gravitomagnetism*, Proceedings of the XXIII Spanish Relativity Meeting, pp 327. JF Pascual-Sánchez, L Floría, A San Miguel & F Vicente, eds. World Scientific (2001).
51. JA Valiente Kroon. *On Killing vectors and Bondi expansions*. In Recent Developments in Gravitation. Proceedings of the Spanish Relativity Meeting. ERE-99, pp 325. J Ibáñez editor. Servicio Editorial de la Universidad del País Vasco (2000).

Outreach articles

52. JA Valiente Kroon. *Some current topics on mathematical General Relativity*. In the 2008 issue of the IOP's Gravity Group Newsletter.
53. R Lazkoz & JA Valiente Kroon. *Ondas Gravitatorias* (in Spanish). Mex. J. Phys. (education) **49**, 384-390 (2003).
54. R Lazkoz & J A Valiente Kroon. *Grabitatsiuhinak* (in Basque). Ekaia **16** 59-71 (2003) — edited by the School of Sciences of the University of the Basque Country, EHU-UPV.