List of Publications

Citation Summary from INSPIRE:

Number of papers	29
Citations	421
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Citations/paper (avg)	14.5

First-authored papers:

1. Inferring three-nucleon couplings from multi-messenger neutron-star observations
   Rahul Somasundaram, Isak Svensson, Soumi De, Andrew E. Deneris, Yannick Dietz, Philippe Landry, Achim Schwenk, Ingo Tews
   e-Print: 2410.00247 [nucl-th]

2. Emulators for scarce and noisy data: application to auxiliary field diffusion Monte Carlo for the deuteron
   Rahul Somasundaram, Cassandra L. Armstrong, Pablo Giuliani, Kyle Godbey, Stefano Gandolfi, Ingo Tews
   e-Print: 2404.11566 [nucl-th]

3. Maximally local two-nucleon interactions at fourth order in delta-less chiral effective field theory
   Rahul Somasundaram, Joel E. Lynn, Lukas Huth, Achim Schwenk, Ingo Tews
   e-Print: 2306.13579 [nucl-th]
   DOI: 10.1103/PhysRevC.109.034005 (publication)
   Published in: Phys.Rev.C 109 (2024) 3, 3

4. Perturbative QCD and the Neutron Star Equation of State
   Rahul Somasundaram, Ingo Tews, Jérôme Margueron
   e-Print: 2204.14039 [nucl-th]
   DOI: 10.1103/PhysRevC.107.L052801 (publication)
   Published in: Phys.Rev.C 107 (2023) 5, L052801

5. Investigating signatures of phase transitions in neutron-star cores
   Rahul Somasundaram, Ingo Tews, Jérôme Margueron
   e-Print: 2112.08157 [nucl-th]
   DOI: 10.1103/PhysRevC.107.025801 (publication)
   Published in: Phys.Rev.C 107 (2023) 2, 025801

6. Comparison of different relativistic models applied to dense nuclear matter
   Rahul Somasundaram, Jérôme Margueron, Guy Chanfray, Hubert Hansen

e-Print: 2109.05374 [nucl-th]
DOI: 10.1140/epja/s10050-022-00733-7
Published in: Eur.Phys.J.A 58 (2022) 5, 84

7. Impact of massive neutron star radii on the nature of phase transitions in dense matter
Rahul Somasundaram, Jérôme Margueron
e-Print: 2104.13612 [astro-ph.HE]
DOI: 10.1209/0295-5075/ac63de
Published in: EPL 138 (2022) 1, 14002

8. Constraints on the nuclear symmetry energy from asymmetric-matter calculations with chiral NN and 3N interactions
Rahul Somasundaram, Christian Drischler, Ingo Tews, Jérôme Margueron
e-Print: 2009.04737 [nucl-th]
DOI: 10.1103/PhysRevC.103.045803
Published in: Phys.Rev.C 103 (2021) 4, 045803

Co-authored papers:

9. A perturbative treatment of non-local chiral interactions in auxiliary-field diffusion Monte Carlo calculations
Ryan Curry, Rahul Somasundaram, Stefano Gandolfi, Alexandros Gezerlis, Ingo Tews
e-Print: 2409.16365 [nucl-th]

10. The impact of dark matter on tidal signatures in neutron star mergers with Einstein Telescope
Hauke Koehn, Edoardo Giangrandi, Nina Kunert, Rahul Somasundaram, Violetta Sagun, Tim Dietrich
e-Print: 2408.14711 [astro-ph.HE]

11. Kilonova Emissions from Neutron Star Merger Remnants: Implications for Nuclear Equation of State
Kelsey A. Lund, Rahul Somasundaram, Gail C. McLaughlin, Jonah M. Miller, Matthew R. Mumpower, Ingo Tews
e-Print: 2408.07686 [astro-ph.HE]

12. Neutron matter from local chiral EFT interactions at large cutoffs
Ingo Tews, Rahul Somasundaram, Diego Lonardoni, Hannah Gottling, Rahul Somasundaram, et al.
e-Print: 2407.08979 [nucl-th]

13. Probe and Prejudice: Classification of compact objects and model comparison using EOS knowledge
Hauke Koehn, Thibeau Wouters, Henrik Rose, Peter T.H. Pang, Rahul Somasundaram, Ingo Tews, Tim Dietrich

e-Print: 2407.07837 [astro-ph.HE]

14. Towards accelerated nuclear-physics parameter estimation from binary neutron star mergers: Emulators for the Tolman-Oppenheimer-Volkoff equations
    Brendan T. Reed, Rahul Somasundaram, Soumi De, Cassandra L. Armstrong, Pablo Giuliani, Collin Capano, Duncan A. Brown, Ingo Tews
    e-Print: 2405.20558 [astro-ph.HE]
    DOI: 10.3847/1538-4357/ad737c
    Published in: Astrophys.J. 974 (2024) 2, 285

15. Measuring Neutron Star Radius with second and third generation Gravitational Wave Detector Networks
    Ananya Bandopadhyay, Keisi Kacanja, Rahul Somasundaram, Alexander H. Nitz, Duncan A. Brown
    e-Print: 2402.05056 [astro-ph.HE]
    DOI: 10.1088/1361-6382/ad828a
    Published in: Class.Quant.Grav. 41 (2024) 22, 225003

16. An overview of existing and new nuclear and astrophysical constraints on the equation of state of neutron-rich dense matter
    Hauke Koehn, Henrik Rose, Peter T.H. Pang, Rahul Somasundaram, Brendan T. Reed et al.
    e-Print: 2402.04172 [astro-ph.HE]

17. Equation of state at neutron-star densities and beyond from perturbative QCD
    Oleg Komoltsev, Rahul Somasundaram, Tyler Gorda, Aleksi Kurkela, Jerome Margueron, Ingo Tews
    e-Print: 2312.14127 [nucl-th]
    DOI: 10.1103/PhysRevD.109.094030 (publication)
    Published in: Phys.Rev.D 109 (2024) 9, 094030

18. What can we learn about the unstable equation-of-state branch from neutron-star mergers?
    Maximiliano Ujevic, Rahul Somasundaram, Tim Dietrich, Jerome Margueron, Ingo Tews
    e-Print: 2311.04809 [astro-ph.HE]
    DOI: 10.3847/2041-8213/ad2072
    Published in: Astrophys.J.Lett. 962 (2024) 1, L3

19. Probing Quarkyonic Matter in Neutron Stars with the Bayesian Nuclear-Physics Multi-Messenger Astrophysics Framework
    Peter T.H. Pang, Lars Sivertsen, Rahul Somasundaram, Tim Dietrich, Srimoyee Sen, Ingo Tews, Michael Coughlin, Chris Van Den Broeck
    e-Print: 2308.15067 [nucl-th]
    DOI: 10.1103/PhysRevC.109.025807 (publication)
    Published in: Phys.Rev.C 109 (2024) 2, 025807

20. Relativistic Hartree-Fock Chiral Lagrangians with confinement, nucleon finite size and short-range effects
    Mohamad Chamseddine, Jérôme Margueron, Guy Chanfray, Hubert Hansen, Rahul Somasundaram
    e-Print: 2304.01817 [nucl-th]
    DOI: 10.1140/epja/s10050-023-01089-2
    Published in: Eur.Phys.J.A 59 (2023) 8, 177

21. Impact of O4 future detection on the determination of the dense matter equations of state
    Jean-François Coupechoux, Roberto Chierici, Hubert Hansen, Jérôme Margueron, Rahul Somasundaram et al.
    e-Print: 2302.04147 [astro-ph.HE]
    DOI: 10.1103/PhysRevD.107.124006 (publication)
    Published in: Phys.Rev.D 107 (2023) 12, 124006

22. Nuclear incompressibility and speed of sound in uniform matter and finite nuclei
    Guilherme Grams, Rahul Somasundaram, Jerome Margueron, Elias Khan
    e-Print: 2207.01884 [nucl-th]
    DOI: 10.1103/PhysRevC.106.044305 (publication)
    Published in: Phys.Rev.C 106 (2022) 4, 044305

23. Neutron star crust properties: comparison between the compressible liquid-drop model and the extended Thomas-Fermi approach
    Guilherme Grams, Jerome Margueron, Rahul Somasundaram, Nicolas Chamel, Stephane Goriely
    e-Print: 2205.15091 [nucl-th]
    DOI: 10.1088/1742-6596/2340/1/012030
    Published in: J.Phys.Conf.Ser. 2340 (2022) 1, 012030

24. NMMA: A nuclear-physics and multi-messenger astrophysics framework to analyze binary neutron star mergers
    Peter T.H. Pang, Tim Dietrich, Michael W. Coughlin, Mattia Bulla, Ingo Tews et al. (including Rahul Somasundaram)
    e-Print: 2205.08513 [astro-ph.HE]
    DOI: 10.1038/s41467-023-43932-6
    Published in: Nature Commun. 14 (2023) 1, 8352

25. Confronting a set of Skyrme and chiral EFT predictions for the crust of neutron stars: On the origin of uncertainties in model predictions
    Guilherme Grams, Jérôme Margueron, Rahul Somasundaram, Sanjay Reddy
    e-Print: 2203.11645 [nucl-th]
    DOI: 10.1140/epja/s10050-022-00706-w
    Published in: Eur.Phys.J.A 58 (2022) 3, 56

26. Properties of the neutron star crust: Quantifying and correlating uncertainties with improved nuclear physics

Guilherme Grams, Rahul Somasundaram, Jérôme Margueron, Sanjay Reddy
e-Print: 2110.00441 [nucl-th]
DOI: 10.1103/PhysRevC.105.035806 (publication)
Published in: Phys.Rev.C 105 (2022) 3, 035806

27. Properties of Neutron Star Crust with Improved Nuclear Physics: Impact of Chiral EFT Interactions and Experimental Nuclear Masses
Guilherme Grams, Jérôme Margueron, Rahul Somasundaram, Sanjay Reddy
e-Print: 2109.11857 [nucl-th]
DOI: 10.1007/s00601-021-01697-y
Published in: Few Body Syst. 62 (2021) 4, 116

28. New insights into sub-barrier fusion of 28Si + 100Mo
A.M. Stefanini, G. Montagnoli, M. D'Andrea, M. Giacomin, C. Dehman et al. (including R. Somasundaram)
DOI: 10.1088/1361-6471/abe8e2
Published in: J.Phys.G 48 (2021) 5, 055101

29. Exotic hadrons in the $\Lambda_b \to J/\psi\, \Phi\, \Lambda$ decay
Volodymyr Magas, Àngels Ramos, Rahul Somasundaram, Júlia Tena Vida
e-Print: 2004.01541 [hep-ph]
DOI: 10.1103/PhysRevD.102.054027
Published in: Phys.Rev.D 102 (2020) 5, 054027

Chapters in Books:

1. Nuclear Theory in the Age of Multimessenger Astrophysics
Chapter title: Inference of Microscopic Nuclear Interactions and the Equation of State from Multimessenger Astrophysics
Rahul Somasundaram and Ingo Tews
CRC Press, eBook ISBN: 9781003306580