Stanford



Jan Rudolph

Senior Research Scientist, Physics

Bio

ACADEMIC APPOINTMENTS

- Senior Research Scientist, Physics

ADMINISTRATIVE APPOINTMENTS

- Research Scientist, Stanford University, (2019-2023)
- Postdoctoral Research Fellow, Stanford University, (2016-2019)

PROFESSIONAL EDUCATION

- Dr. rer. nat., Leibniz Universität Hannover , Physics (2016)

LINKS

- Google Scholar: https://scholar.google.com/citations?user=7IjtBCEAAAAJ&hl=en
- LinkedIn: https://www.linkedin.com/in/j-rudolph/

Research & Scholarship

PROJECTS

- MAGIS-100 - Stanford University

Publications

PUBLICATIONS

- **Cumulative fidelity of large-momentum-transfer clock atom interferometers in the presence of laser noise** *PHYSICAL REVIEW A*
  Jiang, Y., Rudolph, J., Hogan, J. M.
  2026; 113 (5)
- **Terrestrial Very-Long-Baseline Atom Interferometry: summary of the second workshop** *EPJ QUANTUM TECHNOLOGY*
  Abdalla, A., Abe, M., Abend, S., Abidi, M., Aidelsburger, M., Alibabaei, A., Allard, B., Antoniadis, J., Arduini, G., Augst, N., Balamatsias, P., Balaz, A., Banks, et al
  2025; 12 (1)
- **QUEST: A New Technical Committee for Quantum Earth Science and Technology** *IEEE GEOSCIENCE AND REMOTE SENSING MAGAZINE*
  Cavallaro, G., Singh, U. N., Miroszewski, A., Rudolph, J., Strangfeld, A., Sebastianelli, A., Mauro, F., Delilbasic, A.
  2025; 13 (4)
- **Collinear Three-Photon Excitation of a Strongly Forbidden Optical Clock Transition** *PHYSICAL REVIEW X*
  Carman, S. P., Rudolph, J., Garber, B. E., Van de Graaff, M. J., Swan, H., Jiang, Y., Nantel, M., Abe, M., Barcklay, R. L., Hogan, J. M.

2025; 15 (3)

- **High-fidelity holographic beam shaping with optimal transport and phase diversity** *OPTICS EXPRESS*
  Swan, H., Torchylo, A., Van De Graaff, M. J., Rudolph, J., Hogan, J. M.
  2025; 33 (3): 6290-6303

- **Terrestrial very-long-baseline atom interferometry: Workshop summary** *AVS QUANTUM SCIENCE*
  Abend, S., Allard, B., Alonso, I., Antoniadis, J., Araujo, H., Arduini, G., Arnold, A. S., Asano, T., Augst, N., Badurina, L., Balaz, A., Banks, H., Barone, et al
  2024; 6 (2)

- **Atom Interferometry with Floquet Atom Optics.** *Physical review letters*
  Wilkason, T., Nantel, M., Rudolph, J., Jiang, Y., Garber, B. E., Swan, H., Carman, S. P., Abe, M., Hogan, J. M.
  2022; 129 (18): 183202

- **Matter-wave Atomic Gradiometer Interferometric Sensor (MAGIS-100)** *QUANTUM SCIENCE AND TECHNOLOGY*
  Abe, M., Adamson, P., Borcean, M., Bortoletto, D., Bridges, K., Carman, S. P., Chattopadhyay, S., Coleman, J., Curfman, N. M., DeRose, K., Deshpande, T., Dimopoulos, S., Foot, et al
  2021; 6 (4)

- **Collective-Mode Enhanced Matter-Wave Optics** *PHYSICAL REVIEW LETTERS*
  Deppner, C., Herr, W., Cornelius, M., Stromberger, P., Sternke, T., Grzeschik, C., Grote, A., Rudolph, J., Krutzik, M., Wenzlawski, A., Corgier, R., Charron, E., Guery-Odelin, et al
  2021; 127 (10)

- **Large Momentum Transfer Clock Atom Interferometry on the 689 nm Intercombination Line of Strontium** *PHYSICAL REVIEW LETTERS*
  Rudolph, J., Wilkason, T., Nantel, M., Swan, H., Holland, C. M., Jiang, Y., Garber, B. E., Carman, S. P., Hogan, J. M.
  2020; 124 (8): 083604

- **Atomic source selection in space-borne gravitational wave detection** *NEW JOURNAL OF PHYSICS*
  Loriani, S., Schlippert, D., Schubert, C., Abend, S., Ahlers, H., Ertmer, W., Rudolph, J., Hogan, J. M., Kasevich, M. A., Rasel, E. M., Gaaloul, N.
  2019; 21 (6)

- **Fast manipulation of Bose-Einstein condensates with an atom chip** *NEW JOURNAL OF PHYSICS*
  Corgier, R., Amri, S., Herr, W., Ahlers, H., Rudolph, J., Guery-Odelin, D., Rasel, E. M., Charron, E., Gaaloul, N.
  2018; 20

- **Matter-wave optics with Bose-Einstein condensates in microgravity**
  Rudolph, J.
  Gottfried Wilhelm Leibniz Universität. Hannover.
  2016

- **A high-flux BEC source for mobile atom interferometers** *NEW JOURNAL OF PHYSICS*
  Rudolph, J., Herr, W., Grzeschik, C., Sternke, T., Grote, A., Popp, M., Becker, D., Muentinga, H., Ahlers, H., Peters, A., Laemmerzahl, C., Sengstock, K., Gaaloul, et al
  2015; 17

- **Design of a dual species atom interferometer for space** *EXPERIMENTAL ASTRONOMY*
  Schuldt, T., Schubert, C., Krutzik, M., Bote, L., Gaaloul, N., Hartwig, J., Ahlers, H., Herr, W., Posso-Trujillo, K., Rudolph, J., Seidel, S., Wendrich, T., Ertmer, et al
  2015; 39 (2): 167–206

- **STE-QUEST-test of the universality of free fall using cold atom interferometry** *CLASSICAL AND QUANTUM GRAVITY*
  Aguilera, D. N., Ahlers, H., Battelier, B., Bawamia, A., Bertoldi, A., Bondarescu, R., Bongs, K., Bouyer, P., Braxmaier, C., Cacciapuoti, L., Chaloner, C., Chwalla, M., Braxmaier, et al
  2014; 31 (11)

- **Interferometry with Bose-Einstein Condensates in Microgravity** *PHYSICAL REVIEW LETTERS*
  Muentinga, H., Ahlers, H., Krutzik, M., Wenzlawski, A., Arnold, S., Becker, D., Bongs, K., Dittus, H., Duncker, H., Gaaloul, N., Gherasim, C., Giese, E., Grzeschik, et al
  2013; 110 (9): 093602

- **Degenerate Quantum Gases in Microgravity** *MICROGRAVITY SCIENCE AND TECHNOLOGY*

  Rudolph, J., Gaaloul, N., Singh, Y., Ahlers, H., Herr, W., Schulze, T. A., Seidel, S., Rode, C., Schkolnik, V., Ertmer, W., Rasel, E., Muentinga, H., Koenemann, et al

  2011; 23 (3): 287–92

- **iSense: A Portable Ultracold-Atom-Based Gravimeter**

  de Angelis, M., Angonin, M. C., Beaufils, Q., Becker, C., Bertoldi, A., Bongs, K., Bourdel, T., Bouyer, P., Boyer, V., Doerscher, S., Duncker, H., Ertmer, W., Fernholz, et al

  edited by Giacobino, E., Pfeifer, R.

  ELSEVIER SCIENCE BV.2011: 334–36