Giorgio Gratta
Professor of Physics

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Bio

ACADEMIC APPOINTMENTS
- Professor, Physics

LINKS
- Gratta Lab: http://grattalab3.stanford.edu/neutrino/index.html

Teaching

COURSES
2022-23
- Department Colloquium: APPPHYS 300 (Win)
- Department Colloquium: PHYSICS 302 (Aut, Win, Spr)

2021-22
- Quantum and Thermal Physics: PHYSICS 65 (Spr)

2020-21
- Light and Heat: PHYSICS 45 (Aut)
- Quantum and Thermal Physics: PHYSICS 65 (Sum)

2019-20
- Quantum and Thermal Physics: PHYSICS 65 (Spr)

STANFORD ADVISEES
Doctoral Dissertation Reader (AC)
Morgan Brubaker, Jannicke Pearkes, Jyotirmai Singh, Rachel Smith

Postdoctoral Faculty Sponsor
Evan Angelico, Alexander Fieguth, Joseph Howlett, Lorenzo Magrini, Gautam Venugopalan, Marie Vidal

Doctoral Dissertation Advisor (AC)
Publications

PUBLICATIONS

• **Neutrino physics for Korean diplomacy.** *Science (New York, N.Y.)*
  Carr, R., Coleman, J., Gratta, G., Heeger, K., Huber, P., Hor, Y., Kawasaki, T., Kim, S., Kim, Y., Learned, J., Lindner, M., Nakajima, K., Seo, et al
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• **Single-beam dielectric-microsphere trapping with optical heterodyne detection** *PHYSICAL REVIEW A*
  Rider, A. D., Blakemore, C. P., Gratta, G., Moore, D. C.
  2018; 97 (1)

• **Magnetic bubble chambers and sub-GeV dark matter direct detection** *PHYSICAL REVIEW D*
  Bunting, P. C., Gratta, G., Melia, T., Rajendran, S.
  2017; 95 (9)

• **Measurement of the drift velocity and transverse diffusion of electrons in liquid xenon with the EXO-200 detector** *PHYSICAL REVIEW D*
  Albert, J. B., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Cen, W. R., Chambers, C., Cleveland, B., Coon, M., Craycraft, et al
  2017; 95 (2)

• **A density staggered cantilever for micron length gravity probing**
  Wang, Q., Rider, A. D., Moore, D. C., Blakemore, C. P., Cao, L., Gratta, G., IEEE
  IEEE.2017: 1773–78

• **Search for Screened Interactions Associated with Dark Energy below the 100?μm Length Scale.** *Physical review letters*
  Rider, A. D., Moore, D. C., Blakemore, C. P., Louis, M., Lu, M., Gratta, G.
  2016; 117 (10): 101101-?

• **An optimal energy estimator to reduce correlated noise for the EXO-200 light readout** *JOURNAL OF INSTRUMENTATION*
  Davis, C. G., Hall, C., Albert, J. B., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Cen, W. R., Chambers, C., Cleveland, et al
  2016; 11

• **First search for Lorentz and CPT violation in double beta decay with EXO-200** *PHYSICAL REVIEW D*
  Albert, J. B., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Chambers, C., Cleveland, B., Coon, M., Craycraft, A., Daniels, et al
  2016; 93 (7)

• **Cosmogenic backgrounds to 0 nu beta beta in EXO-200** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
  Albert, J. B., Auty, D. J., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Chambers, C., Cleveland, B., Coon, M., Craycraft, et al
  2016

• **Search for 2 nu beta beta decay of Xe-136 to the 0(1)(+) excited state of Ba-136 with the EXO-200 liquid xenon detector** *PHYSICAL REVIEW C*
  Albert, J. B., Auty, D. J., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Chambers, C., Chaves, J., Cleveland, B., Coon, et al
  2016; 93 (3)

• **Testing long-distance modifications of gravity to 100 astronomical units** *PHYSICAL REVIEW D*
  Buscaino, B., DeBra, D., Graham, P. W., Gratta, G., Wiser, T. D.
  2015; 92 (10)

• **Measurements of the ion fraction and mobility of alpha- and beta-decay products in liquid xenon using the EXO-200 detector** *PHYSICAL REVIEW C*
Albert, J. B., Auty, D. J., Barbeau, P. S., Beck, D., Belov, V., Breidenbach, M., Brunner, T., Burenkov, A., Cao, G. F., Chambers, C., Cleveland, B., Coon, M., Craycraft, et al  
2015; 92 (4)

- **Characterization of Silicon Photomultipliers for nEXO** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*  
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- **Investigation of radioactivity-induced backgrounds in EXO-200** *PHYSICAL REVIEW C*  
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- **An RF-only ion-funnel for extraction from high-pressure gases** *INTERNATIONAL JOURNAL OF MASS SPECTROMETRY*  
Brunner, T., Fudenberg, D., Varentsov, V., Sabourov, A., Gratta, G., Dilling, J., DeVoe, R., Sinclair, D., Fairbank, W., Albert, J. B., Auty, D. J., Barbeau, P. S., Beck, et al  
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- **Spectroscopy of Ba and Ba+ deposits in solid xenon for barium tagging in nEXO** *PHYSICAL REVIEW A*  
Mong, B., COOK, S., Walton, T., Chambers, C., Craycraft, A., Benitez-Medina, C., Hall, K., Fairbank, W., Albert, J. B., Auty, D. J., Barbeau, P. S., BASQUE, V., Beck, et al  
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- **A compact ultra-clean system for deploying radioactive sources inside the KamLAND detector** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*  
Banks, T. I., Freedman, S. J., Wallig, J., Ybarrolaza, N., Gando, A., Gando, Y., Ikeda, H., Inoue, K., Kishimoto, Y., Koga, M., Mitsui, T., Nakamura, K., Shimizu, et al  
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- **Laboratory studies on the removal of radon-born lead from KamLAND's organic liquid scintillator** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*  
Keefer, G., Grant, C., Piepke, A., Ebihara, T., Ikeda, H., Kishimoto, Y., Kibe, Y., Koseki, Y., Ogawa, M., Shirai, J., Takeuchi, S., Mauger, C., Zhang, et al  
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- **Search for millicharged particles using optically levitated microspheres.** *Physical review letters*  
Moore, D. C., Rider, A. D., Gratta, G.  
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• The EXO-200 detector, part I: detector design and construction *JOURNAL OF INSTRUMENTATION*
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• A large Bradbury Nielsen ion gate with flexible wire spacing based on photo-etched stainless steel grids and its characterization applying symmetric and asymmetric potentials *INTERNATIONAL JOURNAL OF MASS SPECTROMETRY*
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• A magnetically driven piston pump for ultra-clean applications *REVIEW OF SCIENTIFIC INSTRUMENTS*
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