

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

Garching Maier-Leibnitz-Kolloquium

Donnerstag, 01.07.2021, 16¹⁵ Uhr

Online via ZOOM:

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVlMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

Passcode: 979953

Prof. Dmitry Budker

(Univ. Mainz and UC Berkeley/USA)

Expanding Physics Horizons with the Gamma Factory

The Gamma Factory (GF) is an ambitious CERN proposal (1) for a source of photons with energies up to about 400 MeV and photon fluxes up to 10^{17} photons per second, exceeding those of the currently available gamma sources by orders of magnitude. The high-energy (secondary) photons are produced via resonant scattering of the primary laser photons by highly relativistic partially-stripped ions circulating in the accelerator. The secondary photons are emitted in a narrow cone and the energy of the beam can be monochromatized, eventually down to the ppm level, via collimation, at the expense of the photon flux. In this talk, we will highlight the opportunities offered by the GF in fundamental physics across many subfields (2-4).

(1) M.W. Krasny, The Gamma Factory proposal for CERN, arXiv:1511.07794 [hep-ex](2015)

(2) D. Budker et al., Expanding Nuclear Physics Horizons with the Gamma Factory, arXiv:2106.06584 (2021)

(3) B. Wojtsekhowski and D. Budker, Local Lorentz invariance tests for photons and hadrons at the Gamma Factory, Annalen der Physik (2021), <https://doi.org/10.1002/andp.202100141>, arXiv:2104.03784

(4) D. Budker et al., Atomic physics studies at the Gamma Factory at CERN, Annalen der Physik, <https://doi.org/10.1002/andp.202000204>; arXiv:2003.03855 (2020)

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