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**Possibilities to observe Delbrück scattering at next generation laser facilities** JAMES KOGA, TAKEHITO HAYAKAWA, Natl Inst for Quantum Radiological Science Tech (QST) — We have previously shown that by using high-flux linearly polarized laser Compton gamma-ray sources the contribution of the vacuum component, Delbrück scattering, to the elastic scattering of the gamma-rays off nuclei could be nearly isolated at photon energies of 1.1 MeV [1]. Since for photon energies below the electron-positron pair creation threshold of 1.022 MeV the complex Delbrück scattering amplitude is real and measures only the contribution from virtual pairs [2], it is of interest to measure it for the properties of vacuum. We present our calculations for sub-MeV photon energies and discuss the possibility of measuring Delbrück scattering at new ultra-high power laser and X-ray Free Electron Laser facilities. [1] J. K. Koga and T. Hayakawa, Phys. Rev. Lett 118, 204801 (2017). [2] H. E. Jackson and K. J. Wetzell, Phys. Rev. Lett. 22, 1008 (1969).

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