

Resonant production of dark photons in positron beam dump experiments

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Positrons beam dump experiments have unique features to search for very narrow resonances coupled superweakly to e^+e^- pairs. Due to the continue loss of energy from soft photon bremsstrahlung, in the first few radiation lengths of the dump a positron beam can continuously scan for resonant production of new resonances via e^+ annihilation off an atomic e^- in the target. We explore the foreseeable sensitivity of the Frascati PADME experiment to searching, with this resonance annihilation technique, the 17 MeV dark photon invoked to explain the ^8Be anomaly in nuclear transitions.

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