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Searches for BSM physics at a gamma-gamma collider with Energy < 12 GeV based on European XFEL

Tuesday, 9 July 2024 14:20 (20 minutes)

The possibility of a Gamma-Gamma collider extension to the Beam dump of the 17.5 GeV European XFEL has been discussed before as a first high energy collider of its sort. It would not just be to study the concept of a gamma-gamma collider but this collider would also be without competition in the region of 5—12 GeV for gamma-gamma physics. In this range $b\bar{b}$ and $c\bar{c}$ resonances, tetraquarks as well as mesonic molecules can be observed. Furthermore some BSM processes can also be reached in this range. In this talk we want to discuss the possibility of observing ALPs at this collider as well as an extension to a mixed model of ALPs and dark photon (dark axion portal), that introduces the new couplings not as a product of the individual couplings and therefore offers a rich phenomenology.

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