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Flavored Axion Dark Matter in the Laboratory, the Stars and the Universe

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Standard Model extensions with a light stable axion are well-motivated by the observed Dark Matter abundance and the Peccei-Quinn solution to the Strong CP Problem. In general axions can have large flavor-violating couplings to SM fermions, which naturally arise in scenarios where the Peccei-Quinn symmetry also explains the hierarchical pattern of fermion masses and mixings. I will discuss how these couplings allow for efficient axion production from the decays of SM particles, giving the opportunity to probe flavored axion Dark Matter with precision flavor experiments, astrophysics and cosmology.

Author: ZIEGLER, Robert (KIT - Karlsruhe Institute of Technology (DE))

Presenter: ZIEGLER, Robert (KIT - Karlsruhe Institute of Technology (DE))

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