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Recent progress of the ARIADNE experiment

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The purpose of the Axion Resonant InterAction DetectioN Experiment (ARIADNE)[1] is to detect axion mediated macroscopic interactions between polarized and unpolarized masses using NMR techniques. This experiment is a collaboration among institutes in Korea, IBS/CAPP and KRISS, and US institutes, Northwestern, Stanford, and Indiana University. Wilczek and Moody[2] predicted the possible existence of symmetry violating forces that would be mediated by exotic particles with a very light mass like axions[3]. ARIADNE employs a rotating mass to source the interactions, and a polarized 3He gas as NMR sample to detect axion mediated spin-dependent interactions in sub mm range with high precision. This experiment will investigate a broad mass range of QCD axion from 0.1˜10meV. We report the recent progress of this work at IBS/CAPP as well as the other institutes[4].

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