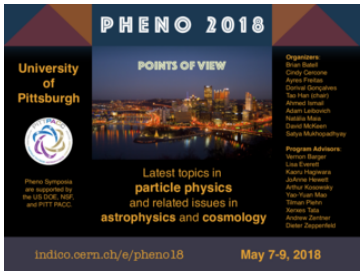

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Axion Production and Detection using Superconducting RF Cavities

Monday 7 May 2018 15:15 (15 minutes)

We propose a “Light Shining Through Walls”-type experiment to search for axions using high-Q superconducting RF cavities. Our setup uses a gapped toroid to confine a static magnetic field, with production and detection cavities positioned in regions of vanishing external field. We argue that the confining toroid does not significantly screen the axion-induced signal for frequencies of order the inverse toroid size. This setup allows both cavities to be superconducting with quality factors Q ˜ 10ˆ10, thus significantly improving the sensitivity of the experiment. Such a search has the potential to probe axion-photon coupling down to g ˜ 2 x 10ˆ-11 GeVˆ-1, comparable to the future ALPS II.

Summary

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