Development of Superconducting LC Resonators for DMRadio

The DMRadio collaboration aims to detect axions, a leading dark matter candidate. To enhance the sensitivity of such searches, the experiment relies on high quality factor (Q) resonators, which enable the detection of axion-induced electromagnetic signals. The DMRadio collaboration has demonstrated quality factors > 10^6 in fixed-frequency superconducting lumped-element resonators operating at hundreds of kHz, enabling a subµeV axion search. This is a significant step toward meeting detector targets for DMRadio-50L. I review these results and discuss progress toward implementing high-Q resonators with tunable frequency.

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