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Acoustic measurements of RF cavity breakdown[1] PETER LANE, PAVEL SNOPOK, YAGMUR TORUN, Illinois Institute of Technology, ALAN BROSS, Fermi National Accelerator Laboratory — Current designs for muon cooling channels require high-gradient RF cavities to be placed in solenoidal magnetic fields in order to contain muons with large transverse emittances. It has been found that doing so reduces the threshold at which RF cavity breakdown occurs. To aid the effort to study RF cavity breakdown in magnetic fields it would be helpful to have a diagnostic tool which can detect breakdown and localize the source of the breakdown inside the cavity. Acoustic data has been taken from the breakdown of various RF cavities being tested at the MuCool Test Area at Fermilab. This data has been used to develop a LabVIEW application that detects, archives, and analyzes acoustic signals received from an array of sensors placed on the outside of a cavity. The breakdown source location is estimated using time-of-arrival triangulation. The current state of the tool as well as plans for future tests on additional cavities will be presented.

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