Daniel Spirn* (spirn@math.umn.edu), 206 Church St. S.E., School of Mathematics, Minneapolis, MN 55455. Detection of a quench in a superconducting cavity.

Superconducting radio frequency cavities are used to efficiently accelerate particles in high energy experimental labs. Small defects on the cavity surface can cause rapid heating of the cavity, leading to a thermal quench and potential damage the device. We present a method for quench detection in SRF cavities cooled in liquid helium. A rigorous mathematical formula is derived to localize the quench position from dynamical data over a finite time interval at a second sound detector. This is joint work with Ru-Yu Lai (U. Minnesota). (Received September 26, 2017)