Abstract Submitted
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**Experimental search for Bremsstrahlung radiation predicted by the hole theory of superconductivity**[1] HAMILTON CARTER, Texas A&M University — The theory of hole superconductivity modifies BCS theory to propose that the paired charge carriers are "undressed" holes instead of electrons. As a consequence of this modification, the theory further states that electrons are expelled from the interior of the superconductor and exist as an excess charge density contained within the London penetration depth at the surface of the material. The theory predicts several experimentally testable consequences. Of these, arguably the most interesting, and the most easily tested prediction is the emission of Bremsstrahlung radiation by the expelled electrons as they redistribute in the superconductor when the superconducting state is quenched. An experimental design to detect the predicted ionizing radiation will be presented. The experiment will utilize a Pb sample cooled to its superconducting state in a liquid helium cryostat. The sample will be quenched using a superconducting magnet contained in the same cryostat. A NaI(Tl) scintillator will be used as the radiation detector. The maximum energy of the Bremsstrahlung spectrum predicted by the theory is 308.22 keV using a Pb sample with a radius of 3.8 cm.

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