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The Required Response of a Surface Current of a Superconducting Sphere to an external Magnetic Monopole - found via an Analytical Extension of the Method of Images ERIC STEINFELDS, KEITH ANDREW, Western Kentucky University — Although magnetic monopoles have been highly elusive from discovery, it has not been possible to dismiss the existence of magnetic monopoles (i.e. 'monopoles') on quantum and classical theoretical grounds. Over the years, there have been proposed some sensitive measurements to detect obscure monopoles of the microscopic scale. In service to these efforts in basic science, we show a potential advantage in using superconductive spheroids to detect magnetic monopoles. Such round detectors are to be of microscopic or nanoscopic scale. When a monopole travels close to one of these detecting spheres, a Meisner (Ms‘) surface current will form and increase as the monopole approaches. This escalation of Ms‘ current can be detected either with sensitive ammeter based electronic monitoring of the sphere or by subtle R.F. wave detections of the R.F. waves which are generated consequentially to the escalated currents. We have formulated to 1st and 2nd order precision the response of Ms‘ surface current on such a superconducting detection sphere to an external Magnetic Monopole. We used an analytical extension of the method of images compounded with the satisfying of the so called No-"Flux" Boundary Condition, which is used by academic engineers for heat transfer [1].

[1] Online lecture material from Darthmouth College; Thayer School of Engieering of Dartmouth College; Course: "ENGS 43: Environmental Transport and Fate", taught by B. Cushman-Roisin; http://thayer.dartmouth.edu/ d30345d/courses/engs43

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