Abstract Submitted
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The Nab experiment and the electric field systematic[1] HUANGXING LI, Univ of Virginia, NAB COLLABORATION — The Nab collaboration will study free neutron beta decay at the Spallation Neutron Source at Oak Ridge National Lab. A neutron decays into a proton, an electron, and an anti-neutrino in this process, where the energy of the outgoing protons and electrons are collected to determine (a) the electron-antineutrino correlation co-efficient a to the precision of $|\delta a/a| \leq 10^{-3}$ and (b) the Fierz interference term b to the precision of $|\delta b| \leq 3\times10^{-3}$. This experiment will test the unitarity of the Cabibbo-Kobayashi-Maskawa Matrix, and shed light on the existence of physics beyond the Standard Model. I will talk about the motivation and design of Nab. In the second part, I will describe in detail our solution to a major systematic effect, the requirement of having a low electrical field environment in the neutron decay region. Nab will provide this with an electrode system made from materials with low work function variations ($\leq$ 10 meV).

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