

Abstract Submitted  
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**Water Cerenkov Detection of Neutrinos and Neutrons**<sup>1</sup> MELINDA SWEANY, UC Davis, STEVEN DAZELEY, ADAM BERNSTEIN, NATHANIEL BOWDEN, LLNL, ROBERT SVOBODA, UC Davis — Special Nuclear Material (SNM) emits both neutrons and high energy gamma-rays via spontaneous or induced fission. The detection of these signatures within cargo containers has recently become a high priority area of study. Both forms of radiation are highly penetrating and likely to defeat some degree of effective shielding. The advanced detector group at LLNL has been actively developing the technology for water based neutron detection as part of this effort. Key aspects of our work have grown out of R&D into Gadolinium doped water Cerenkov detectors for neutrino detection. It is likely that developments made in this work will also feed back into neutrino detector development over time. We have built and deployed a small prototype Gadolinium Tri-Chloride doped water Cerenkov detector and tested it with a <sup>252</sup>Cf fission source. We have also carried out R&D on the attenuation length of GdCl<sub>3</sub> doped water, as well as its effects on likely detector components. We will discuss these results and our plans for the near future.

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