Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Performance of Water-based Liquid Scintillator DMITRIY BEZNOSKO, Electronic Detector Group, BNL — Water-based detectors can only see the Cherenkov light from the fast moving charged particles, thus missing all the particles below the Cherenkov threshold. Detecting these below-threshold particles is important for various applications like the mobile detectors for the nuclear reactor monitoring, the search of the proton decay, and reconstruction of the neutrino energy and the reaction type by observing the vertex activity for both long and short baseline experiments. This detection can be achieved by using the Water-based Liquid Scintillator (WbLS), currently under development. It is based on the idea of dissolving the organic scintillator in water using special surfactants. This new material strives to achieve the novel detection techniques by combining the Cherenkov rings and scintillation light, as well as the total cost reduction compared to pure liquid scintillator (LS). We will present light yield measurements for the proton beam energies of 210MeV, 475MeV and 2000MeV for water, two different WbLS formulations (1% and 4%) and pure LS. These beam energies were chosen to study the contribution of the Cherenkov light to the total output.

Dmitriy Beznosko
Electronic Detector Group, BNL

Date submitted: 08 Jan 2013 Electronic form version 1.4