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A Liquid Hydrogen Target for TPEX WOLFGANG LORENZON, IEVGEN LAVRUKHIN, RICHARD RAYMOND, Univ of Michigan - Ann Arbor, TPEX COLLABORATION — Recent experiments at Jefferson Lab seem to indicate that two-photon exchange contributions must be included in elastic electron-proton scattering to correctly extract the proton elastic form factor. However, experiments performed to specifically study two-photon exchange (VEPP-3, CLAS and OLYMPUS) have so far shown little evidence for significant contributions beyond single photon exchange up to $Q^2 = 2.5 \text{ (GeV/c)}^2$. TPEX, the Two-Photon Exchange experiment at DESY proposes to extend those measurements up to $Q^2 = 4.7 \text{ (GeV/c)}^2$, where the contributions are expected to be significantly larger. In order to compensate for the lower cross sections at the higher energies required to reach those large momentum transfers, TPEX plans to build a new liquid hydrogen target that will yield a luminosity about a factor of 200 times higher than that of the OLYMPUS experiment. In this presentation, we will discuss the requirements and the technical design of the liquid hydrogen target for TPEX.

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