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Progress on a Laser Inverse Compton Scattering Runaway Electron Diagnostic Design for DIII-D[1] GLEN WURDEN, THOMAS ARCHULETA, JOSHUA COLEMAN, JOHN OERTEL, ZHEHUI WANG, THOMAS WEBER, Los Alamos National Laboratory, TODD EVANS, General Atomics, SIMON WOODRUFF, PAUL SIECK, Woodruff Scientific, ERIC HOLLMANN, UCSD, DUSTIN OFFERMANN, Voss Scientific — We report on progress in the design and component testing of a Laser Inverse Compton Scattering diagnostic (i) to measure runaway electrons in the range of 3-30 MeV in the DIII-D tokamak during triggered disruptions. An 80 picosecond, 2-3 Joule, rep-rated Nd:Yag laser is being developed at Voss Scientific. This short-pulse high energy laser is required due to the large background soft x-ray levels and low density of runaway electrons being diagnosed. A 4-channel gated soft x-ray imager (based on ones used at NIF) has been tested on the synchrotron Advanced Photon Source at Argonne National Laboratory. A synthetic diagnostic model is being developed at Woodruff Scientific to optimize design issues, with regards to geometry and choice of filters. Finally, a suitable (tentative) tangential port has been identified on the DIII-D tokamak, and a diagnostic design package is being completed. (i) G. A. Wurden, J. A. Oertel, T. E. Evans, Rev Sci. Instr. 85(11), 11E111, (2014)

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