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Plans for conversion of SURF II to SURF III

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The Synchrotron Ultraviolet Radiation Facility (SURF II) at the National Institute of Standards and Technology, Gaithersburg, MD, USA, has served as a primary radiometric standard in the vacuum ultraviolet region since its conversion from a synchrotron to an electron storage ring in 1974. The magnet iron, however, dates back to an original betatron design of the late 1940's. The advent of both modern materials and methods of finite element analysis have made possible the design of magnets offering far greater dc performance than the existing SURF system. In this paper we discuss the general design and plans to convert SURF II to SURF III, which will offer reduced radiometric uncertainty, an increase in energy from 300 MeV to 385 MeV, a modernized control system, and two new beamlines which are not presently possible. Anticipated new beamline activites include a substantial new effort devoted to radiometric improvements from IR to far UV and development of stations for microspectoscopy and electroreflectance.