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Diagnostics for particle control in toroidal plasmas JENNIFER BAERNY, SIMON WOODRUFF, JAMES STUBER, Woodruff Scientific Inc — To monitor vacuum conditioning and particle control in a toroidal plasma undergoing a compression, three optical diagnostics have been designed an built: a single-chord HeNe (633nm) heterodyne interferometer [1], a collimated soft X-ray/UV bolometer, and an H-alpha detector (similar to [2]). The interferometer will measure the line-average density in the range 1e20 to 1e22m-3. The design and calibration of instruments is presented. 1D modeling of the density profile and recycling coefficients for a toroidal plasma undergoing compression obeying adiabatic scaling relations is presented.

[1] D. Kumar et al. Rev. Sci. Instr,, 77, 083503 (2006)
[2] H. S. McLean et al Rev. Sci. Instr. 72, 1556-561 (2001)

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