

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Development of the diagnostic laser for deep UV probing of the dense Z-pinch¹ B.R. TALBOT, V.V. IVANOV, Department of Physics, University of Nevada, Reno, NV 89557, USA, I.A. BEGISHEV, Laboratory for Laser Energetics, University of Rochester, 250 East River Road, Rochester, NY 14623-1299, USA, A.L. ASTANOVITSKIY, V. NALAJALA, O. DMITRIEV, Department of Physics, University of Nevada, Reno, NV 89557, USA — Lasers are powerful tools for investigation of dense plasmas. UV laser diagnostics at the wavelength of 266 nm were recently developed for Z-pinch plasma. The absorption and refraction in plasma are significantly smaller in the UV range that allows investigation of the fine structure of the stagnated dense Z-pinch. Further development of deep UV diagnostics needs in a laser with high energy, short pulse duration, and smooth beam profile. A Nd:glass laser meets these requirements if operates at the fourth, fifth and sixth harmonics. We have developed a Nd:glass laser for operation at 263 and 211nm with pulse durations of 150ps and 2ns, output aperture of 45mm, and energy > 1J at 263nm and > 0.2J at 211nm. The laser will allow the development of new deep UV diagnostics for dense Z-pinch: multiframe interferometry, tomography, streaked shadowgraphy, and high-resolution Faraday rotation diagnostics.

¹Work was supported by the DOE grant DE-SC0008824 and DOE/NNSA UNR grant DE-NA 0002075.

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Date submitted: 10 Jul 2013

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