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Electron density measurement of non-equilibrium atmospheric pressure plasma using dispersion interferometer¹ SHINJI YOSHIMURA, HIROSHI KASAHARA, TSUYOSHI AKIYAMA, National Institute for Fusion Science, National Institutes of Natural Sciences — Medical applications of non-equilibrium atmospheric plasmas have recently been attracting a great deal of attention [1], where many types of plasma sources have been developed to meet the purposes. For example, plasma-activated medium (PAM), which is now being studied for cancer treatment [2], has been produced by irradiating non-equilibrium atmospheric pressure plasma with ultrahigh electron density to a culture medium [3]. Meanwhile, in order to measure electron density in magnetic confinement plasmas, a CO₂ laser dispersion interferometer has been developed and installed on the Large Helical Device (LHD) at the National Institute for Fusion Science, Japan [4]. The dispersion interferometer has advantages that the measurement is insensitive to mechanical vibrations and changes in neutral gas density. Taking advantage of these properties, we applied the dispersion interferometer to electron density diagnostics of atmospheric pressure plasmas produced by the NU-Global HUMAP-WSAP-50 device, which is used for producing PAM.

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