

Abstract Submitted
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0-D and 2-D LIF Measurements of Small Coulomb Crystals in a Linear RF Trap¹ MITSUTOSHI ARAMAKI, AKIHIRO KONO, Nagoya University, Japan — One goal of our ion trap experiment is to clarify the mesoscopic statistical properties of small one-component plasmas. As the beginning phase of the research, we improved the controllability of laser-cooled one-component plasmas, and developed 0-D and 2-D LIF measurement system. Since the temperature of laser-cooled ions is sensitive to the wavelength of the cooling laser in the vicinity of the phase transition, the stabilization of the laser system is necessary to perform systematic experiments. In this experiment, the long-term drift of the laser wavelength was suppressed to several mega hertz or less per 10 minutes by locking to a Fabry-Perot interferometer. 0-D and 2-D LIF measurements were performed using a photomultiplier or an ICCD camera, respectively. Commonly, it is believed that the sudden drop of 0-D LIF signal indicates the crystallization of plasma. However, the 2-D LIF image immediately after the sudden drop of the 0-D LIF signal showed a cloudy image. In this presentation, we will show the detail of the difference between the 0-D and 2-D LIF results.

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Mitsutoshi Aramaki
Nagoya University, Japan

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