

Abstract Submitted  
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**Observation of Lower-Hybrid Cavitons in Laboratory Plasma<sup>1</sup>**

TAKAO TANIKAWA, Tokai Univ., TAISEI MOTOMURA, SHUNJIRO SHINOHARA, Kyushu Univ. — Lower-hybrid (LH) cavitons are localized wave activities trapped inside density depletions whose frequencies are in the range of the lower-hybrid frequency. In order to investigate the relationship between LH cavitons and lower-hybrid solitary structures (LHSS's) observed in space plasmas, we have constructed Tokai Helicon Device (THD) which is a specially designed rf plasma device and utilizes helicon-type discharge with a flat segmented multi-loop antenna [1]. Plasma is produced repetitively ( $\sim 10$  Hz) with a typical discharge pulse duration of  $\sim 10$  ms. A second rf pulse of short duration (a few  $\mu\text{s}$ ) is injected into an afterglow plasma using the same antenna as used for plasma production. A large amplitude LH wave can be excited at the resonance layer; then density depletion can appear if the condition is right. It can evolve to become an LH caviton. The process has been under investigation. The possibility of particle acceleration due to LH cavitons will be discussed. The characteristics of plasma produced in THD will also be presented. [1] T. Tanikawa *et al.*, Bull. Amer. Phys. Soc. **51** (7), 164 (2006); T. Tanikawa and S. Shinohara, *ibid.* **53** (14), 174 (2008).

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