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**Probe tip length effect of cutoff probe for measurement of high density plasma based on a new circuit cutoff model**<sup>1</sup> SIJUN KIM, JANG-JAE LEE, Applied Physics lab for PLasma Engineering (APPLE), Department of Physics, Chungnam Natl Univ, DAEWOONG KIM, Korea Institute of Machinery and Materials (KIMM), JUNG-HYUNG KIM, Korea Research Institute of Standards and Science (KRISS), SHINJAE YOU<sup>2</sup>, Applied Physics lab for PLasma Engineering (APPLE), Department of Physics, Chungnam Natl Univ — To improve the characteristics of the cutoff probe in measurement of high density plasma, we proposed a General Cutoff (GC) model based on transmission line theory. Although by virtue of this GC model we found the importance of the probe tip length on the measurement of high density plasma, the main effects of the tip length are not fully understood. In this research, we establish a new circuit model by approximating the GC model, and analyze the probe tip length effect in detail. As a results, we find that the ratio of the plasma inductance to the probe tip inductance plays an important role of the measurement limitation of the cutoff probe. This result also suggests a guideline for the design rule of the probe tip length for the measurement of high density plasma with cutoff probe.

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