

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

The radiation enhancement phenomenon of a thin plasma layer covered cylindrical metallic antenna.¹ WENQIU LI, GANG WANG, BIN ZHAO, Institute Of Electronics, Chinese Academy of Sciences — The radiation enhancement phenomenon of a thin plasma layer coated cylindrical antenna can be observed by carefully choosing the plasma frequency and the thickness of the plasma layer. Based on collision free, uniform plasma layer assumption and antenna-sheath-plasma layer configuration, results obtained from Multiphysics finite element method (FEM) simulations show that, when the frequency of the TE wave is equal to 300 MHz, and the thickness of the sheath is about one tenth of the thickness of the plasma layer, the radiation can be enhanced significantly by setting the plasma frequency equals to 1.5 times of the wave frequency. Furthermore, detailed investigations imply that this radiation enhancement phenomenon has a direct dependence on the radius of the cylindrical antenna, the thickness of the plasma layer and sheath thickness.

¹This work is supported by the Chinese Scholarship Council (CSC) with No.201804910897.

Wenqiu Li
Institute Of Electronics, Chinese Academy Of Sciences

Date submitted: 23 Sep 2019

Electronic form version 1.4