

Abstract Submitted
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Power absorption and radiation characteristics of electromagnetic waves penetrated from warm plasma layer coated metallic antenna surface.¹ WENQIU LI, Institute Of Electronics, Chinese Academy Of Sciences — Based on transcendental dispersion relations of azimuthally symmetric and asymmetric modes which penetrated from surface of a warm and collisional plasma layer covered cylindrical metallic surface, impacts of electron temperature and plasma density on sheath thickness, propagation constant, wave power absorption and wave field radiation enhancement intensity are investigated. Analytical results indicate that the sheath thickness has a significant effect on the propagation constant when the sheath thickness parameter δ ranges from 0.1 to 1; for the propagation constant, the electron temperature imposes an evident influence for the $m=0$ mode at $\omega_{pe}/\omega \in (0.001, 10)$ while for the $m=1$ mode the electron temperature effect can be ignored at $\omega_{pe}/\omega < 10$; for the wave power absorption intensity, both of these two modes exhibit minimum value near the line $\omega_{pe}/\omega = 1$; for the wave field radiation intensity, the $m=0$ mode appears a maximum value line which approximately start from the point $(\omega_{pe}/\omega = 1.05, \nu/\omega = 0.98)$ while the $m=1$ mode shows a maximum value line which approximately start from the point $(\omega_{pe}/\omega = 1.05, \nu/\omega = 1.32)$.

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