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Excitation of surface plasma wave over a plasma cylinder by a relativistic electron beam via Cerenkov interaction GAGAN KUMAR, VIPIN KUMAR TRIPATHI, Indian Institute of Technology, Delhi, India — A relativistic electron beam propagating in a plasma cylinder excites a surface plasma wave (SPW) via Cerenkov interaction. The wave frequency decreases with beam velocity. The growth rate, however, initially increases with frequency ω , attains a maximum and then falls off due to the localization of the SPW near the surface. With the increase in the radius of plasma, the optimum growth rate increases in magnitude. The annular beam propagating outside the plasma cylinder excites the SPW with larger growth rate. The study is relevant to capillary plasma created by an intense short pulse laser. The energetic electrons accelerated by the laser wake fields can drive the surface plasma waves.

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