

# Generation of THz Surface Plasma Polariton in Magnetised Hollow Plasma Cylinder Via Modulated Laser

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**Abstract**—*A new scheme is proposed to produce terahertz (THz) surface plasmons at the inner surface via the propagation of amplitude modulated laser beam through a hollow plasma cylinder. The evanescent laser field in the plasma impart oscillatory velocity to electrons and exert a beat ponderomotive force on them. The static component of the ponderomotive force inhibits plasma from filling the vacuum region while the modulated frequency component produces a nonlinear current that drives the modulated frequency THz surface plasma wave (SPW). If the group velocity of the laser equals the phase velocity of the modulation frequency SPW, the phase matching for the THz surface wave excitation is achieved.*