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EBW Current Drive and Heating for Fusion/Fission Hybrids JAKUB URBAN, IPP, Czech Repubic, JOSEF PREINHAELTER, IPP, Czech Republic, GEORGE VAHALA, William and Mary, LINDA VAHALA, Old Dominion University, JOAN DECKER, IRFM, France, ABHAY RAM, MIT — From the RF requirements for spherical tokamak and the need to reduce antenna exposure to neutron bombardment, EBW are an important source for both heating and current drive (CD). ICRF, LH, HHFW antennas are subject to significant neutron damage (as are NBI) because of their very large size and necessary proximity to the plasma. Recently Mahajan et. al. have studied other important uses of fusion neutrons in particular their use in the efficient breeding of fission reactor fuel as well as in the "rapid" destruction of nuclear waste using their Compact High Power Density Fast Neutron Source (CFNS). For overdense plasmas the standard electromagnetic O- and X- mode experience cutoffs. EBW can propagate and be absorbed in such plasmas but its characteristics are strongly dependent on the plasma parameters with important variations in the parallel wave number. If the required temperatures in CFNS are around 35 KeV, then one will may need to revisit the electrostatic approximation and incorporate relativistic effects for EBW rays.

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