

Polarizer design for millimeter-wave plasma diagnostics - DTU Orbit (09/11/2017)

Polarizer design for millimeter-wave plasma diagnostics

Radiation from magnetized plasmas is in general elliptically polarized. In order to convert the elliptical polarization to linear polarization, mirrors with grooved surfaces are currently employed in our collective Thomson scattering diagnostic at ASDEX Upgrade. If these mirrors can be substituted by birefringent windows, the microwave receivers can be designed to be more compact at lower cost. Sapphire windows (a-cut) as well as grooved high density polyethylene windows can serve this purpose. The sapphire window can be designed such that the calculated transmission of the wave energy is better than 99%, and that of the high density polyethylene can be better than 97%.

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