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Theoretical Investigation of Effects of Magnetic Field in Curved Magnetic Filter
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Abstract

The effects of the magnetic field on plasma transport through a quarter torus magnetic filter used to eliminate macro-particles from a cathodic arc plasma source are theoretically investigated by the finite element method. The magnetic flux density and magnetic vectors are evaluated. Our study suggests that in order to attain high plasma transmission efficiency through the magnetic filter, the inner radius of the duct, current applied to the coils, distribution of the magnetic field lines, as well as cross sectional area of the coils are important parameters.

Keywords: magnetic field; cathodic arc; finite element method