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Large Eddy Simulation of Magnetic Damping of Jet

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In the present study, we perform large eddy simulations to investigate the effect of magnetic field on the flow characteristics of a round jet at Re=10000. A dynamic subgrid-scale model is used for large eddy simulation. We consider two different directions of magnetic field: one is the axial direction and the other is the transverse direction. With the axial magnetic field, the shear layer becomes thinner and the potential core becomes longer than those without magnetic field. In case of the transverse magnetic field, the jet progressively spreads along the direction of the magnetic field applied, and the negative axial velocity appears along the direction perpendicular to the magnetic field line.

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