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Dedicated to Professor LAZĂR DRAGOȘ on his 75th birthday

Finite element-boundary element approach of MHD Pipe Flow

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Abstract - This paper deals with the flow of a viscous conducting fluid in a pipe with arbitrary cross-section and arbitrary wall conductivities under the influence of a transverse magnetic field. For the numerical solution a finite element discretization is considered in the domain corresponding to the fluid and inside the walls of the pipe. When the outer medium is considered with an arbitrary conductivity the finite element method is coupled with the boundary element method. The proposed method is illustrated with numerical example.

Key words and phrases : MHD pipe flow, finite element method, boundary element method

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