

Brinkman Flow Past an Impervious Spheroid under Stokesian Assumption

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Abstract : In this paper, we study the Brinkman flow, under Stokesian assumption, past an impervious prolate spheroid and obtain the expressions for the velocity and pressure fields in terms of Legendre functions, Associated Legendre functions, prolate radial and angular spheroidal wave functions. We further obtain an expression for the drag experienced by the spheroid and numerically study its variation with respect to the flow parameters and display the results through graphs.

Keywords : prolate spheroid, porous medium, stokesian assumption, brinkman model, velocity, pressure, drag

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