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MATHEMATICAL MODELLING OF DUSTY GAS FLOW THROUGH ISOTROPIC POROUS MEDIA WITH FORCHHEIMER EFFECTS

In this work, dusty gas flow through isotropic porous media is considered. The equations governing dusty gas flow through free space are intrinsically averaged in order to derive a comprehensive model that describes flow of a dusty gas through porous media. The developed model has features that distinguish it from other models available in the literature. These include its capability of describing the more general time-dependent flow of a non-uniform number density mixture through a variable porosity medium, while taking into account the porous microstructure and both the Darcy resistance and the Forchheimer micro-inertial effects.