Calibration of Discrete Element Method Parameters for Modelling DRI Pellets Flow

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Abstract : The discrete element method is a powerful technique for numerical modeling the flow of granular materials such as direct reduced iron. It would enable us to study processes and equipment related to the production and handling of the material. However, the characteristics and properties of the granules have to be adjusted precisely to achieve reliable results in a DEM simulation. The main properties for DEM simulation are size distribution, density, Young's modulus, Poisson's ratio and the contact coefficients of restitution, rolling friction and sliding friction. In the present paper, the mentioned properties are determined for DEM simulation of DRI pellets. A reliable DEM simulation would contribute to optimizing the handling system of DRIs in an iron-making plant. Among the mentioned properties, Young's modulus is the most important parameter, which is usually hard to get for particulate solids. Here, an especial method is utilized to precisely determine this parameter for DRI.