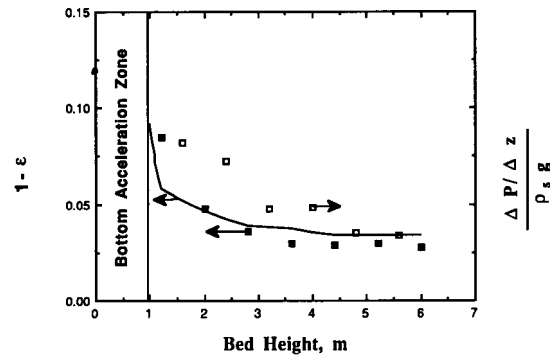


Louge M. and Chang H.: "Pressure and Voidage Gradients in Vertical Gas-Solid Risers," *Powder Tech.* **60**, 197-201 (1990).

The customary practice of inferring average voidage from measurements of vertical pressure gradients may lead to significant errors at the transition between the dense and the dilute regions of a circulating fluidized bed riser. In this context, a one-dimensional model is developed to account for rapid variations of vertical voidage in these calculations. In particular, the model explains the discrepancy observed by Arena, *et al.* between the voidage profiles inferred from pressure gradients and those measured by a quick-closing valve technique [1]. The significance of this effect is discussed.



Comparison of axial profiles of solid volume fractions in a CFB riser 41 mm ID and 6.4 m high, with the superficial gas velocity $u_0 = 7$ m/sec and the solid flux $G_s = 600$ kg/m².sec (Arena, *et al.* 1985). The open squares are inferred directly from the pressure profile and eq. (1). The solid squares are average solid volume fractions measured using quick closing valves. The solid line is the prediction of the one-dimensional model.