

On the time discrete approximation of the Brinkman-Forchheimer equations

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In this work, we study the structural stability of the fully implicit Euler scheme for the Brinkman-Forchheimer equations. More precisely, we consider the time discretization scheme of the unsteady Brinkman-Forchheimer equations, and we prove that it is well posed. We also derive some error estimates of the discrete solution. Next, with the aid of the discrete Gronwall lemma, we show that the numerical solution depends continuously on the Brinkman and the Forchheimer coefficient.