1 Multiscale Modeling of Porous Medium Systems

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1.1 INTRODUCTION

The use of computers over the last 60 years for simulating subsurface flow problems has provided an impressive, ever-expanding ability to model processes at a high resolution. Whereas in the 1960s a computational grid with 500 fixed nodes would have pushed the boundaries of computer power [59], simulations today involve millions of spatial grid points and adaptive meshes [40,57]. The availability of this power for solving equations that purport to describe physical and chemical processes in porous media is wasted, however, if the equations being used to describe