

Perfusion modeling - The link between reservoir simulation and medical compartment modeling

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Abstract

Perfusion, the amount of blood feeding a volume of tissue, has for decades been possible to measure using medical imaging techniques and simple mathematical models. The imaging technology and the mathematical and numerical tools needed to solve the models have evolved rapidly over this period. At the same time, the models themselves have not changed accordingly. In this talk we will see how methods for modeling of porous media flow may contribute to a better mathematical understanding of perfusion modeling. The pressure driven flow through a capillary system is an essential concept both in perfusion and reservoir/porous media simulation. We will discuss how this link may contribute to an improved modeling framework suited to make use of the extensive amount of information accessible through modern 4D medical imaging.

