DIFFUSION FLUX IN SIERPINSKI GASKET AS MODEL OF NATURALLY FRACTURED RESERVOIR

JESÚS M. CHAIDEZ FÉLIX[1] AND JORGE X. VELASCO HERNÁNDEZ[2]

[1]Instituto Mexicano del Petróleo.
Eje Central Lázaro Cárdenas Norte 152, San Bartolo Atepehuacan, 07730, D.F., México.
jchaidez@imp.mx

[2]Instituto de Matemáticas, Universidad Nacional Autónoma de México Juriquilla.
Boulevard Juriquilla No. 3001, Juriquilla, Querétaro 76230, México.
jx.velasco@im.unam.mx, http://www.matem.unam.mx/fsd/velasco

Key words: Sierpinski gasket, NFR, transient pressure.

ABSTRACT

Naturally fractured reservoirs (NFRs) are complex fractured network that have been associated to fractal structures. There are several flux models based on diffusion equation to reproduce transient pressure data that assume power law in the parameters related to the structure. These parameters are estimated by numerical simulations. Those reservoirs are detected when the pressure and derivative pressure plots are parallel. In fact, it is unknown structure. The inverse problem is to know the structure and to check the behavior of pressure. In this talk we present a flux numerical simulation on Sierpinski gasket as NFR, using diffusion equation as flux model (Kigami theory about Analysis on fractals). The objective is compare the behavior of numerical solutions in a fractal versus flux models of NFR.