An Effective Inclusion Rock Physics Model for Clastic Rocks

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ABSTRACT

Rock physics is a multidisciplinary field that provides a link between elastic properties such as acoustic impedance, Vp/Vs ratio and reservoir properties such as porosity and lithology. Rock physics applications include geophysical well log conditioning, constraining inversion parameter through 1D and 2D modeling, in addition to quantifying seismic inversion. Understanding the effect of pore geometry on seismic properties is essential for an improved quantitative interpretation of the reservoir quality.

This abstract describes an inclusion-based rock physics model, the Differential Effective Medium (DEM) model, built and applied to a number of wells, within oil and gas fields targeting a late Carboniferous to early Permian clastic reservoir, located in Central Saudi Arabia. This model was utilized to investigate the effect of pore geometry on compressional and shear seismic wave velocities.