

论文

岩石弹性波速度和饱和度、孔隙流体分布的关系

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摘要 在实验室对6种砂岩进行了连续的进水和失水实验. 测量了两个过程的纵波速度 V_P 、横波速度 V_S 进水和失水速率随饱和度 S_W 的变化; 分析了低饱和度时流体对岩石弹性性质的影响. 实验表明, 进水和失水过程显示不同的纵、横波速度与饱和度关系, 速度不仅与饱和度有关, 还与不同饱和阶段的孔隙流体分布有关, 而且也是水和岩石骨架之间的物理及化学作用所致.

关键词 [波速](#) [饱和度](#) [孔隙流体分布](#) [岩石物理](#)

分类号

DOI:

THE RELATIONSHIP OF WAVE VELOCITIES WITH SATURATION AND FLUID DISTRIBUTION IN PORE SPACE

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Abstract Continuous imbibition and dehydrating experiments are carried out for six samples in laboratory. Compressional wave velocity (VP) and shear wave velocity (VS), the imbibition's and dehydrating rate with water saturation are measured during the two processes. The influence of pore fluid on rock elastic properties at low saturation is analyzed. The experiments show that different saturation process leads to different velocity-saturation relationship. The velocities are not only related to water saturation, but also related to pore fluid distribution during different saturation stage. The velocities are also related to the physical and chemical interaction between water and rock skeleton.

Key words [Velocity](#); [Saturation](#); [Pore fluid distribution](#); [Rock physics](#).

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