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## Numerical Estimation of Carbonate Properties Using a Digital Rock Physics Workflow

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#### Summary:

Digital rock physics combines modern imaging with advanced numerical simulations to analyze the physical properties of rocks. In this paper we suggest a special segmentation procedure which is applied to a carbonate rock from Switzerland. Starting point is a CT-scan of a specimen of Hauptmuschelkalk. The first step applied to the raw image data is a non-local mean filter. We then apply different thresholds to identify pores and solid phases. Because we are aware of a non-neglectable amount of unresolved micro-porosity we also define intermediate phases. Based on this segmentation determine porosity-dependent values for the p-wave velocity and for the permeability. The porosity measured in the laboratory is then used to compare our numerical data with experimental data. We observe a good agreement. Future work includes an analytic validation to the numerical results of the p-wave velocity upper bound, employing different filters for the image segmentation and using data with higher resolution.

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