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**AAPG/SEG/SPWLA HEDBERG CONFERENCE**  
***“Fundamental Parameters Associated with Successful Hydraulic Fracturing – Means and Methods for a Better Understanding”***  
**DECEMBER 7-11, 2014 – AUSTIN, TEXAS**

**Processing Well Log Data Using Empirical Mode Decomposition (EMD) and Diffusion Equation**

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**Abstract**

Detection of sharp changes in the mean level of a given data is important to make most of embedded information. Including well log, the time series under consideration is generally corrupted by some kind of noise, making it difficult to locate the hidden abrupt changes. A number of studies were conducted to better identify discontinuous changes in well logs that may indicate changing lithology or physical properties of formation (e.g. Gaci et al, 2010). Previous works requires priori assumptions such as multi-fractality of data.

In this study, we propose method to segment a well log into distinct stratigraphic or lithologic zone with no priori assumptions on the statistical properties of data or noise. Signal processing scheme presented in this study employ empirical mode decomposition (EMD) and diffusion equation to reduce irregularities or noise in the data and finally Laplacian filter or edge detection is applied to make changes standout. The last step enables us to identify major lithologic changes which were not obvious in the unprocessed data.