Bayesian Wavelet Estimation From Seismic And Well Data

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Lesson 21 - Seismic Sequences Lesson 19 Seismic Interpretation **Sort Seismic Data to CDP Order** *Bayesian Wavelet Estimation From Seismic*
A Bayesian method for wavelet estimation from seis- mic and well data is developed. The method works both on stacked data and on prestack data in form of an- gle gathers. The seismic forward model is based on the convolutional model, where the reflectivity is calculated from the well logs.

Bayesian wavelet estimation from seismic and well data
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Bayesian wavelet estimation from seismic and well data
In this letter, we show how a seismic inversion method based on a Bayesian framework can be applied on poststack seismic data to estimate the wavelet, the seismic noise level, and the subsurface ...

(PDF) Bayesian Framework to Wavelet Estimation and ...
ABSTRACT This paper gives a review of Bayesian parameter estimation. The Bayesian approach is fundamental and applicable to all kinds of inverse problems. ... BAYESIAN ESTIMATION IN SEISMIC INVERSION. PART II: UNCERTAINTY ANALYSIS, ... wavelet estimation and noise   level estimation using a spatially coupled hierarchical Bayesian model ...

BAYESIAN ESTIMATION IN SEISMIC INVERSION. PART I ...
The inversion problem also involves estimation of a seismic wavelet and the seismic   noise level. The noise model is represented by a zero mean Gaussian distribution specified by a covariance matrix. A method for joint AVO inversion, wavelet estimation and estimation of the noise level is developed in a Bayesian framework.

Joint AVO inversion, wavelet estimation and noise   level ...
The wavelet extraction model is formulated as a Bayesian inverse problem, and the software will simultaneously estimate wavelet coefficients, other parameters associated with uncertainty in the time-to-depth mapping, positioning errors in the seismic imaging, and useful amplitude-variation- with-offset (AVO) related parameters in multi-stack extractions.

Wavelet extractor: A Bayesian well-tie and wavelet ...
The method uses a Bayesian approach to estimate the property of interest on a location in a reservoir and quantify the uncertainty associated with the estima-tion. This includes a stochastic variable selection model to reduce the number of wavelet coe–cient needed for accurate prediction of the reservoir properties. We present the model in Section 2.

Bayesian Wavelet Regression for Spatial Estimation
To illustrate that the proposed empirical Bayes block wavelet shrinkage and block wavelet thresholding estimators are appealing visually as well as quantitatively, we present in Fig. 2 a noisy HeaviSine function sampled at n=1024 equally spaced points on [0,1] with RSNR=7. Fig. 3 displays the reconstructions obtained from one simulation using the six wavelet estimators.

Empirical Bayes approach to block wavelet function estimation
Suppose that the seismic wavelet is w(t): (1) w t =   −   w ^   e i   t d   . ( ) is the frequency spectrum. This equation means that the seismic wavelet can be regarded as the superposition of a series of simple harmonic waves   ( ) e i   t, in which   is the frequency of the harmonic wave.

Seismic attenuation compensation by Bayesian inversion ...
We'll look at two ways you can estimate a wavelet when you only have seismic data: fitting a band-pass filter to the frequency content of the data and; doing an autocorrelation. Then we'll look at wavelet estimation options when you have seismic and well-log data. For the sake of illustration, we'll use a portion of the Marmousi2 synthetic ...

Wavelet estimation for well ties - SEG Wiki
Wavelet estimation is an essential step in qualitatively and quantitatively analysing and interpreting seismic data. Applications span from seismic data quality assessment to well ties and seismic inversion. Wavelet estimation methods can be roughly separated into two approaches, data driven inversion methods and analytical definitions.

parametric model for seismic wavelets— with estimation and ...
A method for parametric estimation of seismic wavelets from well logs and seismic data is devel-oped. Parameters include amplitude, skewness, length and fluctuation order, and the link between parameters and wavelet properties provides a user-friendly interpretation of the wavelet function.

Parametric Wavelet Estimation
The problem with using boundaries such as top and/or base of salt, top of volcanics and basement (which can take on a variety of geologic and economic meanings) for estimating wavelet phase is that these boundaries often may be gradational and not sharply defined, so their seismic responses are effectively composite responses to multiple, closely-spaced impedance contrasts rather than to a single, well-known impedance contrast. At the same time, the impedance properties of the materials ...

Visual estimation of wavelet phase - SEG Wiki
In this thesis, the uncertainty aspect of seismic amplitude versus offset (AVO) in version is assessed using a Bayesian approach to inversion. The main objective is to estimate elastic material parameters with associated uncertainty from large seismic data sets, but the in versionproblem also includes estimation of seismic wavelets and the noise level.

NTNU Open: Bayesian Seismic AVO Inversion
The methods for seismic wavelet estimation can be classified into two basic types:deterministic and statistical. By combining the deterministic spectral coherence method and the statistical skewness attribute method, the amplitude and phase of the timevarying wavelet are estimated separately.

TIME-VARYING SEISMIC WAVELET ESTIMATION FROM NONSTATIONARY ...
prestack seismic data using Bayesian linearized AVO inversion to estimate elastic and assess their properties uncertianty. We also show how to combine a credible seismic inversion result with rock physics analysis to identify gas carbonate reservoir. Introduction . Seismic responses in carbonates are poorly studied, and a

Combined Bayesian AVO inversion with rock physics to ...
Density Estimation and Wavelet Thresholding via Bayesian Methods: A Wavelet Probability Band and Related Metrics Approach to Assess Agitation and Sedation in ICU Patients In Kang, Irene Hudson, Andrew Rudge and J. Geoffrey Chase Additional information is available at the end of the chapter

Density Estimation and Wavelet Thresholding via Bayesian ...
Seismic source wavelet estimation from the seismic data using borehole velocity and density information is one of the important steps in seismic data processing and is also very useful for inversion process to estimate the impedance changes for accurate mapping of natural oil and gas deposits.