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测井、井间地震与地面地震数据联合约束下的地质统计学随机建模方法研究

杨锴, 艾迪飞, 耿建华*

同济大学海洋地质国家重点实验室, 上海 200092

A new geostatistical inversion and reservoir modeling technique constrained by well-log, crosshole and surface seismic data

YANG Kai, AI Di-Fei, GENG Jian-Hua*

State Key Laboratory of Marine Geology, Tongji University, Shanghai 200092, China

摘要

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摘要 利用能够整合测井信息与井间地震信息的地质统计学随机模拟方法,结合传统的地质统计学反演思路,得到了一种能够同时整合测井、井间地震与地面地震三种先验信息的地质统计学反演与储层建模方法.由于井间射线信息、测井信息与地面地震数据在随机反演与建模过程当中都得到了尊重,因此与传统地质统计学反演仅利用了测井与地面地震数据相比,本文的地质统计学反演与建模方法更充分地利用了先验信息,有效提高了反演的精度,降低了随机建模中的多解性.基于理论数据的测试证实了上述观点.

关键词 地质统计学反演, 随机模拟, 多信息联合约束储层建模

Abstract: Based on a geostatistical simulation method conditioned to well-log and crosshole seismic rays, a novel geostatistical reservoir inversion (modeling) technique constrained by well-log, crosshole and surface seismic data is presented. Compared with existing geostatistical inversion methods only the well-log and surface seismic data being honored, all related prior information include well-log, crosshole seismic data and surface seismic data are honored in presented method. Thus the accuracy of geostatistical inversion/modeling is greatly improved and the uncertainty of inversion/modeling is reduced. The test on synthetic data proved the above points.

Keywords Geostatistical inversion, Stochastic simulation, Reservoir modeling constrained by multi-type data

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