Title (en)

METHOD FOR QUICKLY FORMING A STOCHASTIC METHOD REPRESENTING THE DISTRIBUTION OF A PHYSICAL VARIABLE IN A HETEROGENEOUS ENVIRONMENT BY APPROPRIATE SELECTION OF GEOSTATIC REALIZATIONS

Title (de)

VERFAHREN ZUR SCHNELL HERSTELLUNG EINES STOCHASTISCHES MODELL, WELCHES DIE VERTEILUNG EINER PHYSIKALISCHEN GRÖSSE IN EIN HETEROGENES MEDIUM DURCH EIN GEEIGNETES AUSWAHL VON GEOSTATISTISCHEN AUSFÜHRUNGEN DARSTELLT

Title (fr)

METHODE POUR FORMER RAPIDEMENT UN MODELE STOCHASTIQUE REPRESENTATIF DE LA DISTRIBUTION D'UNE GRANDEUR PHYSIQUE DANS UN MILIEU HETEROGENE PAR UNE SELECTION APPROPRIEE DE REALISATIONS GEOSTATISTIQUES

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Application

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Abstract (en)

[origin: FR2852710A1] In order to select geostatic versions allowing the objective function to be minimized rapidly, a number N (N N) of versions are generated and (N-1) other versions are selected from them with indicators with the highest absolute value. This indicator is a scalar product between the corresponding version and the gradient of the objective function for the initial version (y). The stochastic numerical model is supported by relationship with data obtained by measurements in the medium or preliminary observations, and characteristics of the fluid displacements in the medium. It is produced using an iterative process of gradual deformation where at each iteration are combined linearly an initial version (y) and a number (N-1, N1) of other versions (y i with i=1, . (N-1)), independent of the initial version, imposing constraints on the coefficients of the linear combination. An objective function (J) measuring the gap between a set of non linear data deduced from the combination using a simulator and the given dynamic data is minimized. The iterative process is repeated until reaching an optimal version of the stochastic model. The other versions are ranked in order of decreasing absolute value. The indicators are used to initialize an optimisation algorithm with initial parameters q of optimal gradual deformation and non zero. The geostatic gradient is determined by the adjoint state method. The combination only affects part of the initial version, the gradual deformation iterative process is applied to a Gaussian white noise used to generate a Gaussian version and the geostatic gradient is determined as the derivative of the objective function with respect to the components of the Gaussian white noise.

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