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Cohen-Bacrie et al.

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(54) **METHOD OF DETECTING ELASTICITY VARIATIONS AND ECHOGRAPHIC APPARATUS FOR CARRYING OUT THE METHOD**

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(57) **ABSTRACT**

A method of detecting elasticity variations in a soft tissue which is subjected to an external compression in a predetermined axial direction includes the steps of:

- estimating a field of axial displacements in the tissue,
- determining an elasticity modulus estimator, including an operation for minimizing a distance between an image of a distribution of elementary elasticity moduli, by a Finite Element Model, and the axial displacement field,
- and regularizing the solution of the estimator by means of a diagonal matrix (R) whose coefficients  $\alpha_{ii}$  are functions of the axial displacements ( $d_i$ ) and are applied to the respective values of the elementary elasticity moduli ( $e_i$ ) in order to ensure that these elementary elasticity modulus values remain within an uniform interval which is centered around a mean value of each elementary modulus.

**12 Claims, 4 Drawing Sheets**

