ISTITUTO ITALIANO
DI TECNOLOGIA

TITLE

Material stiffness measurement instrument

INVENTORS

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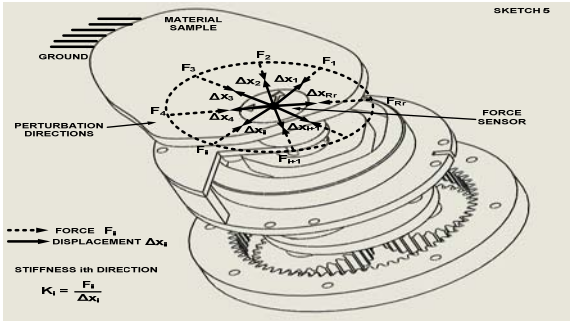
DESCRIPTION

Material characterization has always been a challenging task. In this field this novel instrument allows measuring multidimensional stiffness in two or three dimensions; the value of the stiffness is mainly associated for a mono-dimensional displacement. The present invention allows scanning the stiffness value of whatever material evaluating the stiffness in multiple directions.



APPLICATIONS

Typical applications of this device are in the fields of:

- Material characterization: aeronautic and naval research, so as any industrial applications where the elasticity of a component (stiffness) and the capability to flex in the linear domain without creeping is the main feature for defining its level of performance and safety. For example any compound material that is highly anysotropic must be caharacterized in terms of stiffness capacity before being used for those applications where flexibility and elstic properties are key features.
- Medical applications: in the field of neurorehabilitaton and functional restoration muscular stiffness is the main information on the ongoing recovery process; after brain injuries muscular hypertonia (involuntary contraction) is usually associated to the brain damage with an high level of joint stiffness; an accurate measurement of the articular stiffness over the course of the therapy is a key point for understanding the effectiveness of the rehabilitative application.
- Prostethics: all the prosthesis must be characterized in terms of elasticity under different dynamical conditions; the proposed solution can be used to built testing bench for prosthetic applications.

KEYWORDS

stiffness measurement, stiffness instrument, material characterization

BIBLIOGRAPHIC DATA TO2011A000482

Apparecchiatura per la misura della rigidezza di un campione di materiale in più direzioni giacenti in un piano

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