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### On variational approaches in NRT continua (Article)

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**Abstract**

In the paper some features of the theory of Not Resisting Tension (NRT) material are deepened. In details, one first introduces the basic NRT model, which is proved to simply and effectively interpreting the behaviour of mechanical bodies made by not cohesive materials; thereafter one analyses energetic approaches and limit analysis tools for problems relevant to NRT continua. Afterward, on the basis of the fundamental variational theorems, the main rules governing the NRT behaviour are demonstrated, by imposing Kuhn-Tucker stationarity conditions for the stated constrained optimisation procedures. Finally an application is operated of the presented theory to an elastic NRT semi-plane subject to a distributed load, reproducing the stress situation induced in the soil by a foundation structure. © 2005 Elsevier Ltd. All rights reserved.

**Author keywords**

Bi-dimensional statics; Energetic approach; Foundation structures; NRT model; Stress field; Stress propagation

**Indexed keywords**

**Engineering controlled terms:** Constraint theory; Elasticity; Mathematical models; Optimization; Problem solving; Stress analysis; Tensile stress; Tensors; Variational techniques  
**Engineering uncontrolled terms:** Bi-dimensional statics; Energetic approach; Foundation structures; Not resisting tension (NRT) model; Stress field; Stress propagation  
**Engineering main heading:** Materials science

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