

**Abstract for GR-TR Conference on Statistical Mechanics
and Dynamical Systems**

Talk Invited

Invited Talk

**Similarity between brittle fracture and financial crisis: How
can we introduce plasticity in financial world ?**

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Concepts and mathematics developed in material science can be applied to finance. In this talk I will focus on occurrence and avoidance of financial crisis in view of brittle fracture and plastic deformation. Brittle fracture and financial crisis have many features in common: 1 The system looks strong before the occurrence of a breakdown. 2 Potential stress tends to concentrate on a weak point. 3 A breakdown occurs suddenly based on a threshold rule. 4 A breakdown induces successive breakdowns. 5 The failure causes an irreversible damage to the whole system. In order to get rid of fragility from the financial world, it is necessary to introduce plasticity by any means. In this talk I will introduce a new way of financing without using fixed interest rate by taking into account the statistical properties of business firm growth rates.
