

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research*

*Department of Mathematics*

# **WORKING SEMINAR**

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November 30, 2011, 2:30 - 3:30pm

Rm 309, Run Run Shaw Building, HKU

## **Antifragility and tinkering in biology (and in business) : Flexibility provides an efficient epigenetic way to manage risk**

### **Abstract**

The notion of antifragility, an attribute of systems that makes them thrive under variable conditions, has recently been proposed by Nassim Taleb in a business context. This idea requires such systems to tinker, i.e., to creatively respond to changes in their environment. A fairly obvious example of this is natural selection-driven evolution. In this ubiquitous process, an original entity, challenged by an ever-changing environment, creates variants that evolve into novel entities. Analysing functions that are essential during stationary-state life yields examples of entities that may be antifragile. One of them is proteins with flexible regions that can undergo functional alteration of their side residues or backbone and thus implement the tinkering that leads to antifragility. This in-built property of the cell chassis must be taken into account when considering construction of cell factories driven by engineering principles.

*All are welcome*