



The Abdus Salam
International Centre for Theoretical Physics



**Workshop on
NEW TRENDS IN QUANTUM DYNAMICS AND ENTANGLEMENT
21 - 25 February 2011**

Thermodynamic Entropy Production: Measure of Quantum Frameness

Lajos DIOSI

Research Institute for Particle and Nuclear Physics
H-1525 Budapest 114, Hungary

Abstract:

Any local perturbation can attribute a certain "frameness" to an otherwise translation invariant (zero-frameness) homogeneous quantum system. A measure of such frameness was introduced earlier in terms of relative von Neumann entropy. We point out that this measure can be interpreted as the total thermodynamic entropy production of the equilibration process provided we assume a "graceful irreversible map" in addition to the unitary evolution of the initial local perturbation.