Contribution ID: **32** Type: **not specified**

Does Analog Computation Exist?

Wednesday, 18 May 2016 11:30 (20 minutes)

By establishing a relation between information erasure and continuous phase transitions we generalise the Landauer bound to analog computing systems. The entropy production per degree of freedom during erasure of an analog variable (reset to standard value) is given by the logarithm of the configurational volume measured in units of its minimal quantum. As a consequence every computation has to be carried on with a finite number of bits and infinite precision is forbidden by the fundamental laws of physics, since it would require an infinite amount of energy.

Primary author: DIAMANTINI, Maria Cristina (PG)

Co-author: GAMMAITONI, Luca (PG)

Presenter: DIAMANTINI, Maria Cristina (PG)

Session Classification: Parallel Session 18 am