Università degli Studi di Trieste
Dipartimento di Fisica

Seminar

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Friday 9 February, 2018 – 11:30 AM – Luigi Stasi
Seminar Room – Strada Costiera, 11 – Trieste

SELF-OSCILLATIONS IN PHOTOVOLTAIC/THERMOELECTRIC/FUEL CELLS AND BIOLOGICAL ENGINES

Abstract
A standard textbook picture of photovoltaic/thermoelectric/fuel cells (PTF) and biological engines (e.g. proton pumps) assumes a direct transformation of light, heat or chemical energy into electric current. However, this scheme is inconsistent with the basic principles of electrodynamics and thermodynamics. To solve this problem the mechanism of collective electric charge self-oscillations fed by a constant energy supply, has been proposed. A simple analog system - a steam engine used to propel the so-called "putt-putt boat" is used to illustrate the physics of work generation in PTF. The main new prediction of the proposed theory is the emission of electromagnetic radiation by PTF in THz or IR region, or conversely, resonant stimulation of PTF by electromagnetic oscillations. Remarkably, both phenomena has been recently observed in photovoltaic devices based on organic materials, but treated as only auxiliary effects enhancing their efficiency.

Organizzazione a cura di: prof. F. Benatti

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Everyone interested in the topic is welcome to attend