

PHYSICS DEPARTMENT COLLOQUIUM

“Acoustic Engines for Harvesting Energy from Waste Heat”

BY

Orest Symko
University of Utah

A very promising approach in the development of renewable energy is based on a thermal energy conversion from waste heat using acoustics. By coupling a source of heat to an acoustic resonator which contains an element across which a temperature gradient can be established, a very loud sound can be generated. A piezoelectric device connected to this acoustic field can generate electrical energy. This type of energy converter is simple, it has essentially no moving parts, and it is efficient. It will be used in a variety of applications where waste heat can be harvested for energy conversion, from power plants with their hot heat stacks to computers and to solar energy. Development of such devices is based on new materials, miniaturization, and increase in power density. The approach is simple and the benefits in terms of renewable energy are immense.

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