

CONVERSION OF ENVIRONMENTAL HEAT INTO USABLE ENERGY

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Rezumat. *Prezentăm descoperirea recentă a unui fenomen de conversie a căldurii mediului ambiant în energie de câmp electromagnetic coerent, și mai departe în energie electrică, pe baza a două dispozitive pe care le-am numit ,convertor de căldură cuantic' și ,sistem de injecție cuantic'. Un convertor de căldură cuantic se bazează pe cuplarea a două fenomene cunoscute anterior: superradianța și efectul Peltier, cuplate printr-un element activ pe care l-am numit ,transistor superradiant'. Când un curent electric este injectat într-un dispozitiv care conține un număr suficient de mare de transistoare superradiante, un câmp electromagnetic coerent este emis prin tranziții cuantice în joncțiunile emitor-bază, pe seama unei absorbții de căldură prin joncțiunile colector-bază. Energia radiată de acest dispozitiv poate fi utilizată direct, în unele aplicații, sau convertită în energie electrică prin utilizarea unui sistem de injecție cuantic.*

Abstract. *We present a recent discovery of a phenomenon of conversion of the environmental heat into coherent electromagnetic energy, and further, into electric energy, on the basis of two semiconductor devices we called ,quantum heat converter' and ,quantum injection system'. A quantum heat converter is based on the coupling of two phenomena, previously known: the superradiance and the Peltier effect, coupled by a active element we called ,superradiant transistor'. While an electric current is injected in a device containing a sufficiently large number of superradiant transistors, a coherent electromagnetic field is emitted by quantum transitions in the emitter-base junctions, on the account of heat absorption by the collector-base junctions. The energy radiated by this device can be directly used, in some applications, or converted into electricity by a quantum injection system.*

Keywords: coherent field, correlated transitions, superradiant transistor, quantum heat converter, quantum injection system

1. Introduction

Our civilization is based on large energy consumption, mainly obtained by burning different fuels, chemical, or nuclear. However, these processes producing large chemical, or nuclear wastes, began to become dangerous for our life conditions on this planet.

Consequently, other techniques for the energy production from clean sources as waterfalls, winds, marine tides, or solar radiation, have been developed. However, these technologies are generally based on big installations, with small efficiencies, and critically depending on external conditions, which are not satisfied everywhere on the Earth. A much more accessible energy source is heat, but previously it was believed that its conversion into usable energy is not possible,
