International Conference on Integrability
Recursion Operators and Soliton Interactions
29-31 August 2012, Sofia, Bulgaria
B. Aneva, G. Grahovski
R. Ivanov and D. Mladenov, Eds
Avangard Prima, Sofia 2014, pp 35–45

SCHRÖDINGER MINIMUM UNCERTAINTY STATES OF EM-FIELD IN NONSTATIONARY MEDIA WITH NEGATIVE DIFFERENTIAL CONDUCTIVITY

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Abstract. Quantization of the electromagnetic field in non-stationary media (linear with respect to $\boldsymbol{E}$, with negative differential conductivity) is investigated. The dynamical invariants and statistical properties of the field are found in such media. It is shown that in the eigenstates of linear dynamical invariant, the Schrodinger uncertainty relation is minimized. The time evolution of the tree independent second-order statistical moments (quantum fluctuations: covariance cov(q,p), var(q) and var(p)) are found out.

1. Introduction

The increasing use of energy as a result of the Industrial Revolution has brought a number of serious problems. Understanding the process of photosynthesis will play key role to solve these problems and to develop alternative energy sources in two asspects

- producing alternative fuels (such as H_2, biofuel etc.)
- producing directly Electricity using artificial photosynthesis in Dye-sensitized solar cells.

In the first processes (photosynthesis) the solar light is transformed into chemical energy, saved in molecule **adenosine triphosphate** (ATP). Thus a universal accumulator of energy is formed for widdely distributed biological processes [22].

[*]Reprinted from Geometry, Integrability and Quantization **14** (2013) 37–47.