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Constituent quantization of soliton fields. I: Canonical action-angle formalism for the sine-Gordon system. II: Nonlinear Schrödinger system. (English) Zbl 0575.35086

Univ. Bielefeld, Forschungszentr. Bielefeld-Bochum-Stochastik 53, 23 p. (1985).

It is well known that quantization of classical Hamiltonians is an ambiguous, coordinate-dependent procedure. The paper in question gives this problem a new setting: quantization in the action-angle variables (i.e., in a sense, canonical, constituent) is developed and investigated for completely integrable systems.

The two model cases discussed are the soliton fields in sine-Gordon and nonlinear Schrödinger equations. The energy spectra obtained after quantization are claimed to conform with those traditionally obtained by the radiation contribution is automatically accounted for the constituent quantization scheme.

Reviewer: [A.Bocharov](#)

MSC:

- [35Q99](#) Partial differential equations of mathematical physics and other areas of application Cited in 1 Document
- [81T08](#) Constructive quantum field theory
- [81R30](#) Coherent states
- [81U99](#) Quantum scattering theory

Keywords:

quantization; classical Hamiltonians; action-angle variables; completely integrable systems; soliton fields; sine-Gordon; nonlinear Schrödinger; energy spectra