Topological Phase Fields, Baecklund Transformations, and Fine Structure

Binder, Bernd (2002) Topological Phase Fields, Baecklund Transformations, and Fine Structure.

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Abstract

Quantum coupling is defined by comparing the evolution of an input to an output phase, where the phase is evolving on a curved pseudospherical surface. The difference given by interference obeys a single-valuedness condition since the output phase is coupling back to the input phase. We arrive at B\"acklund transforms and corresponding sine-Gordon soliton equation. The idealized resonance or feedback condition corresponds to an oscillator potential that can be mapped by projective geometry to Coulomb coupling, where the effective coupling strength can be iteratively determined.

Keywords:	pseudosphere, phase, berry, Gordon, sine-Gordon, Baecklund, Aharonov, Bohm, Thirring, Lobachevski, Chebyshev, Kaehler, stereographic, projection, fine structure, iteration, iterative
Subjects:	Specific Sciences: Physics: Fields and Particles Specific Sciences: Mathematics Specific Sciences: Physics Specific Sciences: Physics: Quantum Field Theory
ID Code:	841
Deposited By:	Binder, Bernd
Deposited On:	17 October 2002