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Thirring sine-Gordon relationship by canonical methods. (English) Zbl 1099.81516

Eur. Phys. J. C, Part. Fields 32, No. 3, 443-452 (2004).

Summary: Using the canonical method developed for anomalous theories, we present the independent rederivation of the quantum relationship between the massive Thirring and the sine-Gordon models. The same method offers the possibility to obtain the Mandelstam soliton operators as a solution of the Poisson brackets “equation” for the fermionic fields. We checked the anticommutation and basic Poisson brackets relations for these composite operators. The transition from the Hamiltonian to the corresponding Lagrangian variables produces the known Mandelstam’s result.

MSC:

81T10 Model quantum field theories

Cited in 2 Documents

Keywords:

Mandelstam soliton operators; Poisson brackets; composite operators

Full Text: [DOI](#) [arXiv](#)

References:

- [1] S. Coleman, *Phys. Rev. D* 11, 2088 (1975) · [doi:10.1103/PhysRevD.11.2088](#)
- [2] S. Mandelstam, *Phys. Rev. D* 11, 3026 (1975) · [doi:10.1103/PhysRevD.11.3026](#)
- [3] M. Stone, *Bosonization* (World Scientific 1994)
- [4] R.F. Streater, I.F. Wilde, *Nucl. Phys B* 24, 561 (1970) · [doi:10.1016/0550-3213\(70\)90445-1](#)
- [5] M.B. Halpern, *Phys. Rev. D* 12, 1684 (1975) · [doi:10.1103/PhysRevD.12.1684](#)
- [6] G. Morchio, D. Pierotti, F. Strocchi, *J. Math. Phys.* 33, 777 (1992) · [doi:10.1063/1.529757](#)
- [7] N. Nakanishi, *Prog. Theor. Phys.* 57, 581, 1025 (1977)
- [8] M. Henneaux, C. Teitelboim, *Quantization of gauge systems* (Princeton Univ. Press, 1992) · [Zbl 0838.53053](#)
- [9] A. Miković, B. Sazdović, *Mod. Phys. Lett. A* 10, 1041 (1995) · [Zbl 1022.81701](#) · [doi:10.1142/S0217732395001150](#)
- [10] B. Sazdović, *Phys. Rev. D* 62, 045011 (2000) · [doi:10.1103/PhysRevD.62.045011](#)
- [11] W. Thirring, *Ann. Phys. (NJ)* 3, 91 (1958) · [Zbl 0078.44303](#) · [doi:10.1016/0003-4916\(58\)90015-0](#)
- [12] C.R. Hagen, *Nuovo Cim. B* 51, 169 (1967) · [doi:10.1007/BF02712329](#)

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