Nuclear Locally Convex Spaces

Inverse Scattering and Local Observable Algebras
in Integrable Quantum Field Theories

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Abstract

We present a solution method for the inverse scattering problem for integrable two-dimensional relativistic quantum field theories, specified in terms of a given massive single particle spectrum and a factorizing S-matrix. An arbitrary number of massive particles transforming under an arbitrary compact global gauge group is allowed, thereby generalizing previous constructions of scalar theories. The two-particle S-matrix S is assumed to be an analytic solution of the Yang-Baxter equation with standard properties, including unitarity, TCP invariance, and crossing symmetry.

Using methods from operator algebras and complex analysis, we identify sufficient criteria on S that imply the solution of the inverse scattering problem. These conditions are shown to be satisfied in particular by so-called diagonal S-matrices, but presumably also in other cases such as the $O(N)$-invariant nonlinear σ-models.

1 Introduction and Overview

This paper is part of a research program on the non-perturbative construction and analysis of integrable relativistic quantum field theories in two dimensions, prominent examples being the Sinh-Gordon model, the Ising model, the Sine-Gordon model, the $O(N)$ σ-models, and many more. Such field theories are simple enough to be accessible by a range of different methods, and yet rich enough to sometimes resemble features of QFT in four dimensions (see, for example [1, 28]). The literature on integrable quantum field theories in general is so voluminous that we have to restrict ourselves to mention the monographs [1, 55, 35, 7] as just a few sample references.

The main focus of the present article is the *construction* (in a sense to be made precise) of a large family of such models. In some cases, a construction with the tools of constructive quantum field theory in the Euclidean setting [27] has been accomplished a long time ago. In particular, the Sine-Gordon model was constructed from its classical Lagrangian by quantization and perturbative renormalization by Fröhlich [26]. More recently, Benfatto, Falco and Mastropietro proved the equivalence between the massless Sine-Gordon model and the Thirring model [9] and constructed the Thirring model in the Euclidean setting [8]. Most other models, however, have not been established in a non-perturbative manner yet.

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Title, Nuclear locally convex spaces. Volume 66 of Ergebnisse der Mathematik und ihrer Grenzgebiete Nuclear Locally Convex Spaces, Albrecht Pietsch.Nuclear locally convex spaces. Front Cover. Hans Jarchow. Dept. of Mathematics , University of Maryland, - Mathematics - pages.A. Pietsch, Nuclear Locally Convex Spaces. Translated from the Second German Edition by William H. Ruckle. VI + S. Berlin Examples of locally convex spaces (and at the same time classes of . In particular, in such a space any nuclear operator has a uniquely.Trove: Find and get Australian resources. Books, images, historic newspapers, maps, archives and more.This chapter discusses the polar subsets of locally convex spaces. The chapter characterizes the bounded Hilbert balls in nuclear l.c. spaces E that are not.Mathematics. Nuclear topologies on non-archimedean locally convex spaces N. De Grande-De KimpePerfect locally K-convex sequence spaces. Proc. Kon.A nuclear operator on a Hilbert space has the important property that its trace c) A nuclear space is a locally convex topological vector space such that for any.product ?o, and the inductive tensor product ?i. Let E denote a locally convex space. If E is nuclear then E?? F ? E?o F. This is the defining property of nuclear.This article expects rudimentary familiarity with classical theory of locally convex spaces in general, (cf. [9], [13]) and nuclear spaces in particular (cf. [16], [24]).Most facts are stated in terms of the nuclear space or its dual. . Thus for any locally convex topological vector space X there is associated a.Nuclear Locally Convex Spaces by Albrecht Pietsch, , available at Book Depository with free delivery worldwide.scenarioselling.com: Nuclear locally convex spaces (Ergebnisse der Mathematik und ihrer Grenzgebiete band 66) () by Albrecht Pietsch and a great.13 Jun - 5 sec Watch Download Nuclear Locally Convex Spaces (Ergebnisse der Mathematik und.nuclear locally convex spaces with an equicontinuous basis. Using this result, we characterize (H(U), To)' algebraically as a space of holomorpbic germs and.