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Towards the characterization of wedge-local observables in integrable models with bound states

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We discuss the structure of local observables in 1+1-dimensional quantum integrable models. An important advantage in these models is the existence of an "interacting Fock-space", generated by interacting creation and annihilation operators (so-called Zamolodchikov operators). The observables in question are (usually infinite) series in Zamolodchikov operators with certain functions ("form factors") as coefficients. However, locality of this form factor expansion is hard to establish as convergence of products of expansions is difficult to control. A solution to this problem can be the use of a wedge-local field, i.e., with a weaker localization. This can be expressed as a finite "expansion" in Zamolodchikov operators, taking a form similar to a free field. Making use of this intermediate object, local observables have been characterized in terms of infinite expansions in scalar models without bound states. We present a generalization of this approach to models with bound states
(e.g., the Bullough-Dodd or Z(N)-Ising model). In these models, the wedge-local field loses its simple "free field like" form due to an additional unbounded term with intricate domain properties. These complications increase in models with composite particles, e.g., the Z(4)-Ising model. Recent advances in this direction are presented.

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