



## Mathematics and CS Seminar

# Point interactions with variable particle number and the domain of the Nelson Hamiltonian

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**Host: Robert Seiringer**

I will present some recent results on the construction of self-adjoint Hamiltonians for models with point interactions that do not conserve particle number. In these models, one type of nonrelativistic quantum particles can absorb and emit a second type of (bosonic) particles on contact, which gives rise to an interacting system of particles whose total number is not fixed. The Hamiltonian and its domain of self-adjointness are given in terms of (singular) boundary conditions on the set of collision configurations between the different particles. After introducing the main ideas using a simple example, I will focus on such a model in two space dimensions. This model shares many features of the Nelson model of nonrelativistic quantum field theory, to which our construction can also be applied. This gives an explicit characterisation of the domain of the Nelson Hamiltonian. Finally, I will briefly explain the necessary modifications for the treatment of a more singular three-dimensional model.

This talk is based on joint work with Julian Schmidt (Tübingen).

**Tuesday, June 26, 2018 04:00pm - 06:00pm**

IST Austria Campus Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: <https://ist.ac.at/en/campus/how-to-get-here/> The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.