Bologna Workshop on:
CFT AND INTEGRABLE MODELS
and their applications from gauge/gravity dualities to statistical mechanics and quantum information

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A fixed point approach to solve the generalized hydrodynamics equation

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In this talk I will to present a novel approach to solve the (Euler scale) GHD equation. It consists of mapping the GHD equation onto an equivalent fixed point problem. This fixed point problem is remarkable in the sense that it completely decouples in space and time. Thus, given an arbitrary time t and a space point x, the fixed point equation determines the solution of the GHD equation directly at this point. This does not only give rise to a new efficient algorithm to solve the GHD equation, but also allows for a mathematical study of its solution: I will demonstrate its power by showing that solutions to the GHD equation of the (repulsive) Lieb-Liniger model always exist, are unique and do not show shock formation.

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