ABSTRACT:

The aim of these lectures is to introduce the notion of thick (aka microformal) morphisms of (super)manifolds and to develop their application to brackets structures, e.g. homotopy Poisson manifolds and L-infinity algebroids. Thick morphisms are not maps, but they include ordinary smooth maps as a special case. The main feature of these morphisms is that they induce pullbacks on smooth functions that are in general non-linear. This non-linearity is essential for application to homotopy brackets. Though the definition of thick morphisms does not require itself anything "super", the applications are based on supergeometry. Hence I will start from recollection of the language of supermanifolds in differential geometry, in particular, for bracket structures. Tentative plan: 1. The language of supermanifolds in differential geometry. 2. Construction and properties of thick morphisms. Examples. 3. "Quantum" thick morphisms. Further developments.