Conference on New Challenges and Perspectives in Symplectic Field Theory
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Polyfolds

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Abstract

In order to overcome the transversality problems in SFT, Hofer-Wysocki-Zehnder have introduced new "scale" smooth structures on Banach spaces and "polyfolds", a generalization of Banach manifolds, allowing for locally varying dimensions. In this language, the compactified moduli spaces of SFT can be described as the zero set of a "Fredholm section" in a "polyfold bundle". Two main features of this Polyfold-Fredholm theory are an abstract transversality theorem and an implicit function theorem, which should be applicable in large generality to moduli spaces of PDE's with a well understood singularity formation. I will focus on some basic elements of the general theory and show
1.) how the action of reparametrization groups (which aren't differentiable in the Banach space sense) become smooth maps in "scale calculus"
2.) how the pregluing construction near "broken holomorphic buildings" fails to provide a chart in a Banach manifold but naturally leads to the notion of a "splicing core", on which polyfold charts are modelled.