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Floer theory
for Hamiltonian particle-field systems

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While in classical mechanics the dynamics of particles are determined under the assumption that the fields are known a priori, in coupled particle-field systems one views the fields equally as part of the dynamical process. While it is apparent that point particles need to be replaced by extended particles with sufficiently regular shape functions for classical solutions to exist, it turns out that the nonlinearities in the resulting infinite-dimensional Hamiltonian systems still exhibit enough compactness properties so that Floer theory can be suitably generalized, even despite the presence of a small divisor problem. This is joint work with my PhD student Niek Lamoree.