LONG TERM WELLPOSEDNESS OF SOME PERIODIC DISPERSIVE EQUATIONS

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In this talk, I will focus on a fundamental model in plasma physics, namely the Euler-Poisson system, posed on the torus. This equation describes the flow of an incompressible fluid of electrons under its own electrostatic force. I will show the long term regularity of the Euler-Poisson system on 2D tori. The conclusion is that, if the initial data is ϵ-close to the constant solution, then the life span of the solution is at least $R/\epsilon^2(\log R)^{O(1)}$. Time permitting, I will also talk about similar results in 3D periodic water waves.