

GCCE Seminar:
**Introduction to Weakly
Nonlinear Analysis**

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12th April 2022 9:00 in Inffeldgasse 25/D i3,
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The seminar introduces the method of weakly nonlinear analysis at the example of shape oscillations of Newtonian liquid drops. The seminar presents the basics of the method such that the attendants can apply it to their own problems in research. Fields of application are all kinds of processes governed by nonlinear differential equations. The method relies on series expansions of the unknowns of the problem with respect to a small parameter. In incompressible fluid flow without heat transfer, the unknowns are velocity and pressure. Introducing the expansion into the equations of motion and collecting terms with equal power of the expansion parameter produces a set of equations at different order of approximation of the solutions, which are solved successively. The method is therefore otherwise called the “method of successive approximation”. Potentials and limitations of the method are addressed. Application of the method to nonlinear shape oscillations of Newtonian liquid drops reveals predictions of the drop oscillation behavior, which are in good agreement with experiment.

All the interested are cordially invited.