demonstrate familiarity with the mathematical analysis techniques involved in proving the well-posedness of interacting particle systems and of the needed tightness properties to reach macroscopic scales (particularly, what concerns the handling of reaction-diffusion equations, transport equations, and of combinations thereof),

demonstrate familiarity with applied measure theory and optimal transportation techniques,

demonstrate familiarity with derivations of smooth particle hydrodynamics (SPH) discretizations of partial differential equations and provide implementations (in Python, Julia, or in other open-source computational platform) for selected tests, and

demonstrate familiarity with constructing numerical approximations of hybrid systems.

Course content

The course is based on an individual study of the course literature on interacting particles systems, partial differential equations and their mesh free approximations, and related materials. The course includes scientific discussions with the supervisor(s) and with other colleagues.

Reading list

See separate document.

Examination

For a Pass grade, doctoral students are required to actively participate in the seminars, and have one submission task accepted.

Grades

One of the grades Fail (U) or Pass (G) is awarded ie of e gr7(shx(a)4(mi)14(a)4(ti)&(o)-&(h)4(e))-&(h)0(h)-

Goals that, after completing the course, are fulfilled for the doctoral or licentiate degree are marked with an X.

