

*Hydrology Seminar***Perturbation techniques for river morphology****Ludovico Agostini (PhD candidate)**

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*Date: Tuesday 10 October**Time: 16:30-17:30**Room: ETH Hönggerberg, HIF D80.2***Abstract**

The complex nature of systems is in general linked to the dependence of the visible and measurable outcomes on a multitude of variables, tight together with strongly nonlinear relations and embedded in complex geometries. It is however possible to still represent these complex systems using approximate solutions by using numerical methods and perturbation techniques.

The latter make use of the first few terms of the asymptotic expansion of the constituting equations, which, if properly applied, leads to elegant analytical solutions. The use of this tool together with scaling techniques has led in the past seventy years to classical solutions taken today as common scientific knowledge. Nowadays the use of these techniques has greatly helped basic research to achieve a deeper understanding of the systems and design more accurate numerical experiments.

With this seminar the fundamental assumptions behind perturbations techniques and a handful of classical solutions examples will be presented. I will focus mainly on hydraulic solutions and river morphology problems.