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# Active flux for triangular meshes for non linear hyperbolic problems

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In this talk, we show how to construct a numerical method for solving hyperbolic problems, whether linear or nonlinear, using a continuous representation of the variables and their mean value in each triangular element. This type of approach has already been introduced by Roe, and others, in the multidimensional framework under the name of Active flux, see [1, 2, 3, 4, 5]. Here, the presentation is more general and follows [6, 7]Various examples (linear advection, KPP, Euler equations) show the good behavior of the method in both linear and nonlinear cases, including non-convex problems. The expected order of precision is obtained in the linear case. This work represents a step towards the development of methods in the spirit of virtual finite elements for linear or nonlinear hyperbolic problems, including the case where the solution is not regular.

During the talk, we will explain the principle of the method, in particular how it is adapted to unstructured meshes, and will show examples showing the stability and the accuracy for linear and non linear problems for third and fourth order approximation.

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