

ENERGY PRESERVATION FOR MOVING MESH PDES

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Recently, there has been a growing interest in designing integral preserving schemes for PDEs which use well-known ideas from ordinary differential equations, such as discrete gradient methods and the averaged vector field method. Although adapting such schemes to simple finite difference or finite element methods on constant uniform grids is straightforward, the situation becomes much more challenging when the spatial mesh is non-uniform or even changing with time. In the latter case it is not even very clear what should be meant by an integral being preserved. In this talk we shall look at various possible ways of giving meaning to the concept of integral preservation of moving mesh PDEs and we provide some promising numerical results.

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