## Coupled problems efficient solution through DEIM-based data projection across non-conforming interfaces

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Expensive multi-scale and multi-physics problems are nowadays part of cornerstone problems of applied sciences and engineering, ranging from fluid-structure interaction problems to electromechanical couplings. Major challenges of coupled problems are the treatment of interface nonconforming meshes and the physical and geometrical parameters dependency of the two submodels. Knowing how outputs of interest are affected by parameter variations relies upon expensive repeated solutions of the model at hand. In this talk, we propose a parametric reduced order coupled model (ROM) combining efficient ROMs techniques with the discrete empirical interpolation method (DEIM) to efficiently interpolate or project parameter dependent Dirichlet and Neumann data across conforming and non-conforming interface meshes. The presented technique can be regarded as an alternative to the numerical schemes such as those relying on domaindecomposition methods, improving the computational performances of one way coupled models and two ways coupled models linked at the interface by Dirichlet-Neumann interface conditions.