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# ADVANCES IN GEOMETRY INDEPENDENT APPROXIMATIONS

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**Abstract** *We present recent advances in geometry independent field approximations. The GIFT approach is a generalisation of isogeometric analysis where the approximation used to describe the field variables no-longer has to be identical to the approximation used to describe the geometry of the domain.*

*As such, the geometry can be described using usual CAD representations, e.g. NURBS, which are the most common in the CAD area, whilst local refinement and meshes approximations can be used to describe the field variables, enabling local adaptivity.*

*We show in which cases the approach passes the patch test and present applications to various mechanics, fracture and multi-physics problems.*

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