

Isogeometric analysis of diffusion problems on random surfaces

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In this talk, we discuss the numerical solution of diffusion equations on random surfaces within the isogeometric framework. Complex computational geometries, given only by surface triangulations, are recast into the isogeometric context by transforming them into quadrangulations and a subsequent interpolation procedure. Moreover, we describe in detail, how diffusion problems on random surfaces can be modelled and how quantities of interest may be derived. In particular, we propose a low rank approximation algorithm for the high-dimensional space-time correlation of the random solution. Extensive numerical studies are provided to quantify and validate the approach.

REFERENCES

- [1] W. Huang and M. Multerer, Isogeometric analysis of diffusion problems on random surfaces. *arXiv preprint arXiv:2109.03761*, 2021.