

**TREFFTZ COMPUTATIONAL METHODS**  
**(200 ADVANCED DISCRETIZATION TECHNIQUES)**

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**ABSTRACT**

This Mini-Symposium addresses both the fundamental aspects and the practical applications of Trefftz methods in computational engineering. The general principle of Trefftz methods is to combine linearly exact solutions of the PDEs, the most used functions being wave-based functions, polynomials or fundamental solutions. Significant advances have been made recently, especially about the control of ill-conditioning, the treatment of large systems, structural dynamics, solving of non-linear problems...

**REFERENCES**

- [1] E. Trefftz. “Ein Gegenstück zum Ritzschen Verfahren”. In: *Proc. 2<sup>nd</sup> Int. Conf. Appl. Mech.*, Zurich, pp. 131–137, (1928).
- [2] H. Li, P. Ladevèze and H. Riou. “On wave based weak Trefftz discontinuous Galerkin approach for medium-frequency heterogeneous Helmholtz problem”, *Comp. Meth. Appl. Mech. Engng.* Vol. 328, pp. 201–216, (2018).
- [3] J. A. Kołodziej, J. K. Grabski, “Many names of the Trefftz method”, *Engng. Anal. Bnd. Elem.*, Vol. 96, pp. 169-178, (2018).