

Meeting: 1004, Bowling Green, Kentucky, SS 1A, Special Session on Numerical Analysis, Approximation, and Computational Complexity: Interdisciplinary Aspects

1004-41-189 **Fengbo Hang**, Department of Mathematics, Michigan State University, East Lansing, MI 48824, and **Youming Li*** (yiming@georgiasouthern.edu), Department of Computer Sciences, Georgia Southern University, Statesboro, GA 30460. *On Efficiency of Smolyak's Algorithms for Sobolev Spaces.*

Consider bounded algorithms $T_k : W_p^{r_k}[0, 1] \rightarrow W_q^{r_k}[0, 1]$ ($k = 1, \dots, d$). We demonstrate that $\|\otimes T_k\| \leq \prod_k \|T_k\|$ holds for $p \leq q$. This result extends the major results in an earlier paper (see Reference below). Thus it provides more cases for which Smolyak's algorithms can be applied for approximation efficiently in the worst case setting.

References

- [1] Y. Li, Applicability of Smolyak's algorithms to certain Banach spaces of multivariate functions, *J. Complexity* 18.3 (2002), 792-814.

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