

cases	doc_1		doc_2		decision	id
					NOT DUPLICATES	355
	authors	<ul style="list-style-type: none"><li>Jianfeng Lu</li><li>Yulong Lu</li><li>Min Wang</li></ul>	authors	<ul style="list-style-type: none"><li>Jianfeng Lu</li><li>Yulong Lu</li><li>Min Wang</li></ul>		
	title	A Priori Generalization Analysis of the Deep Ritz Method for Solving High Dimensional Elliptic Equations	title	A Priori Generalization Analysis of the Deep Ritz Method for Solving High Dimensional Elliptic Equations		
	publication_date	2021-01-05 00:00:00	publication_date	2021-01-05 00:00:00		
	source	SupportedSources.OPENALEX	source	SupportedSources.SEMANTIC_SCHOLAR		
	journal	arXiv (Cornell University)	journal	ArXiv		
	volume		volume	abs/2101.01708		
	doi	10.48550/arxiv.2101.01708	doi			
	urls	<ul style="list-style-type: none"><li>https://openalex.org/W3118958351</li><li>https://doi.org/10.48550/arxiv.2101.01708</li><li>http://arxiv.org/pdf/2101.01708</li></ul>	urls	<ul style="list-style-type: none"><li>https://www.semanticscholar.org/paper/0ca0b9e9adfb3d60efbfb771cab8fde7d9f9e391</li></ul>		
	id	id-2272679940607201790	id	id2103177553914871994		
	abstract		abstract	This paper concerns the a priori generalization analysis of the Deep Ritz Method (DRM) [W. E and B. Yu, 2017], a popular neural-network-based method for solving high dimensional partial differential equations. We derive the generalization error bounds of two-layer neural networks in the framework of the DRM for solving two prototype elliptic PDEs: Poisson equation and static Schrödinger equation on the d-dimensional unit hypercube. Specifically, we prove that the convergence rates of generalization errors are independent of the dimension d, under the a priori assumption that the exact solutions of the PDEs lie in a suitable low-complexity space called spectral Barron space. Moreover, we give sufficient conditions on the forcing term and the potential function which guarantee that the solutions are spectral Barron functions. We achieve this by developing a new solution theory for the PDEs on the spectral Barron space, which can be viewed as an analog of the classical Sobolev regularity theory for PDEs.		
	versions		versions			