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	authors	• Bucci, Michele-Alessandro • Charpiat, Guillaume • Faney, Thibault • Gratien, Jean-Marc • Nastorg, Matthieu • Schoenauer, Marc	**authors**	• Matthieu Nastorg	DUPLICATES	180
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	id	id7868033305651603007	**id**	id-8834083033479092087		
	abstract	International audienceThis paper proposes a novel Machine Learning-based approach to solve a Poisson problem with mixed boundary conditions. Leveraging Graph Neural Networks, we develop a model able to process unstructured grids with the advantage of enforcing boundary conditions by design. By directly minimizing the residual of the Poisson equation, the model attempts to learn the physics of the problem without the need for exact solutions, in contrast to most previous data-driven processes where the distance with the available solutions is minimized	**abstract**	This paper proposes a novel Machine Learning-based approach to solve a Poisson problem with mixed boundary conditions. Leveraging Graph Neural Networks, we develop a model able to process unstructured grids with the advantage of enforcing boundary conditions by design. By directly minimizing the residual of the Poisson equation, the model attempts to learn the physics of the problem without the need for exact solutions, in contrast to most previous data-driven processes where the distance with the available solutions is minimized.		
	versions		**versions**			