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			authors	• Mohamed I. Nouh • Yosry A. Azzam • Emad A. -B. Abdel-Salam	DUPLICATES	275
	authors	• M. Nouh • Y. A. Azzam • E. Abdel-salam	**title**	Modeling Fractional Polytropic Gas Spheres Using Artificial Neural Network		
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	id	id2484529673536409317	**abstract**	Lane-Emden differential equations describe different physical and astrophysical phenomena that include forms of stellar structure, isothermal gas spheres, gas spherical cloud thermal history, and thermionic currents. This paper presents a computational approach to solve the problems related to fractional Lane-Emden differential equations based on neural networks. Such a solution will help solve the fractional polytropic gas spheres problems which have different applications in physics, astrophysics, engineering, and several real-life issues. We used Artificial Neural Network (ANN) framework in its feedforward back propagation learning scheme. The efficiency and accuracy of the presented algorithm are checked by testing it on four fractional Lane-Emden equations and compared with the exact solutions for the polytopic indices n=0,1,5 and those of the series expansions for the polytropic index n=3. The results we obtained prove that using the ANN method is feasible, accurate, and may outperform other methods.		
	abstract	None	**versions**			
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