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Solutions to the Van der Pol Equation: a Model of Aortic Blood Flow

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Abstract

Quantitative modeling, of large arteries, plays an important role in predicting and describing functional hemodynamic components. Here we present a descending thoracic aortic model based upon the nonlinear Van der Pol equation. The model is created by modification of the solution to this second order differential equation. The model displays a stroke volume of 97.82 ml and an average velocity of 22 cm/s for a heart rate of 70 bpm. An aortic radius of 1.16 cm is assumed.

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