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Application Of Numerical Methods of Solving Time Delay Differential Equations Using Python

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In this paper we are presenting the numerical integration techniques applied in solving time delayed system. These systems are described by a type of differential equation in which the derivative of the unknown function at a certain time is given in terms of the values of the function at previous times. For the solution we are using the JiTCDDE package, a standalone Python implementation of the DDE integration method proposed by Shampine and Thompson. As an application, we have implemented the proposed technique in the Lang-Kobayashi equations which describe a solid state laser with optical feedback.

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