Approximation for the solutions of Lorenz system with systems of differential equations

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Using the systems of difference equations from [1] and [2] as approximation for the solutions of the Lorenz system of differential equations we obtain three new systems of differential equations whose locally behavior is close to the behavior of Lorenz system. By computer simulations we give examples where locally behavior of the systems is analyzed by comparing of behavior for the different time step. By increasing the time step it can be seen that behavior of systems is farther away from the behavior of Lorenz system.