

## ABSTRAK

Pada skripsi ini, model sistem memristor kubik orde empat diformulasi dari hukum sirkuit Kirchhoff dan hukum induksi Faraday dengan menggunakan memduktansi yang dikarakterisasi oleh fungsi kuadrat definit positif. Dengan menggunakan kriteria Routh-Hurwitz, ditinjau kestabilan sistem di sekitar titik ekuilibrium. Hasil yang diperoleh menunjukkan bahwa solusi sistem memristor kubik orde empat stabil. Beberapa contoh kasus yang diselesaikan secara numerik telah mengkonfirmasi hasil analisis tersebut.

**Kata Kunci:** Memristor kubik orde empat, kriteria Routh-Hurwitz, hukum sirkuit Kirchhoff, hukum induksi Faraday, Runge-Kutta orde empat.



## ABSTRACT

In this final project, a model of fourth order cubic memristor system is formulated from the Kirchhoff circuit law and the Faraday induction law, by using a memductance which is characterized by a quadratic positive definite function. Through the Routh-Hurwitz criterion, the stability of the system near the equilibrium points is examined. It is shown that the solutions of the fourth order cubic memristor system are stable. Some examples which are solved numerically confirm the analytical results.

**Keywords:** Fourth order cubic memristor, Routh-Hurwitz criterion, Kirchhoff circuit law, Faraday induction law, fourth order Runge-Kutta.

