We need a title, boi

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Introduction

In 1885, a competition was held by Acta Mathematica in which participants were challenged to solve one of four outstanding math problems of time. Henri Poincaré, a prominent mathematician of the time, entered the contest and ultimately won. However, his submission contained a critical mistake that led to the discovery of homoclinic orbits and forever changed the future of dynamical mathematics. In the following report, this history and controversy of Poincaré's mistake are discussed, the mathematics that led to the discovery of homoclinic orbits are analyzed, and from this theory, real homoclinic orbits are found, simulated, and presented.

History

- History
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Circular Restricted Three Body Problem and Applications

- Description of CR3BP
- Application to find POs... manifolds... homoclinic orbits
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Mathtastic Section

- Looking into it...

Periodic/Homoclinic Orbits

- Eq points and stability
- zero velocity curves
- POs and algorithm to find them

- manifolds and the algorithms
- PO stability ... eigenvalues of monodromy matrix; Poincare sections and their intersections ... homoclinic orbits
- Plotting and discussion of homoclinic orbits (piecewise)
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Conclusion

- Homoclinic orbits are cool/interesting, but for spacecraft applications they aren't very useful; Heteroclinic orbits are useful fa show

References