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\* Tanner Bernth

\* Robert Walters

\* Project 1 Report

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\* **Introduction**

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These programs involve solving the n-body problem, which simulates the evolution of the galaxy. Each body in the galaxy has a mass and an initial position and velocity. Gravity causes acceleration and movement between these bodies. The n-body system simulates the evolution by calculating the forces on every body at each time step. To make the programs more interesting, elastic collisions were included, meaning the total energy remains the same after the two objects collide.

To simulate the n-body problem, we created both a sequential and parallel version in order to see the differences in performance for each. Additionally, we created a graphical representation of the programs in order to see the results of the calculations and the collisions.

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\* **Programs**

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\* **Verification**

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\* **Timing Experiments**

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\* **Other Experiments**

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\* **Conclusion**

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