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MAE 5419
Dr.T
Project Proposal

Main Problem: Minimizing ΔV (fuel) or time on an interplanetary orbit of a probe to neptune with gravity assist
Additional Problem if Time Permits: Minimizing ΔV (fuel) and time on an interplanetary orbit to neptune with gravity assist

I want to be able to find the lowest amount of fuel for a probe to go from Earth to Neptune using a gravity assist. This would be similar to voyager 2's pathway. I am unsure as to which methodology I should use to try to accomplish this. I do know that the thrust necessary to break Earth's orbit is needed which will change since the amount of fuel will change, therefore, the mass of the rocket will change. This would then mean that this should be a numerical approach using the hamiltonian with the two body orbital mechanics equations discussed in intro to astrodynamics. I need further assistance with this problem.