TRAJECTORIES TO THE MOON

Wayne Mobbs

Optimal Two-Impulse Trajectories with Moderate Flight Time for Earth-Moon Missions
A trans-lunar injection (TLI) is a propulsive maneuver used to set a spacecraft on a trajectory that will cause it to arrive at the Moon. Typical lunar transfer.

The Apollo Moon Landings: How They Worked (Infographic)
A SURVEY ON TRAJECTORIES TO THE MOON. Antonio Fernando Bertachini de Almeida Prado. Instituto Nacional de Pesquisas Espaciais - INPE. São José.

Trans-lunar injection - Wikipedia
If nothing else were done, Apollo 11 would pass behind the moon and then fall back to Earth (a "free return" trajectory). Instead, firing a rocket.

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Related books: Vampires of the Sky, Black Lotus (Sano Ichiro),

JUNGLE OF CONFUSION, Uma Ode a Vida O Amor e a Solidão (Portuguese Edition), THE GARDEN: The Unauthorized Biography of Adam and Eve, Apostolic Conversion, Daniel Deronda [with Biographical Introduction].

The results show that the flight time obtained for the optimal trajectories about 4. According to the results presented in Tables 2 and 3we note, regardless the dynamical model used in the analysis, that 1 lunar missions with clockwise LMO arrival spend more fuel than lunar missions with counterclockwise LMO arrival; 2 the flight time is nearly the same for all lunar missions with clockwise LMO arrival, independently on the final altitude of LMO. Results in Tables Trajectories To The Moon and 3 show good agreement. Inallcases,thetrajectoriesarefeasible,thatis,thespacecraftdoesnot For given initial conditions, corresponding to a counterclockwise circular low Earth orbit at Space Station altitude, the optimization problem has been solved for several final conditions, corresponding to either a clockwise or counterclockwise circular low Moon orbit at different altitudes. Once in orbit, the rockets can be turned off. ThecylindricalservicemoduleSMcontainedpropellanttanks,themainrock models describing the motion of the spacecraft exhibit very complex dynamics that are used to design new Earth-to-Moon trajectories [5 – 10].