

The Mechanics of Moving Asteroids

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A fundamental problem for all asteroid mitigation concepts is how to best alter the trajectory of the body in question. This is a non-trivial issue and brings together many different aspects of dynamics, engineering, and small body science. This paper will focus on some select issues that pertain to this problem, and will attempt to define a coherent approach to the problem. First, we will discuss what is currently known or suspected about the surface and interiors of small bodies, and their implications. Second, we will discuss the mechanics of altering an asteroid's trajectory and spin state, incorporating realistic numbers for thrust levels available. Finally, combining these previous topics, we will survey some possible approaches to implementing these maneuvers. Throughout we will focus mainly on the use of "low-thrust" devices for effecting these changes to the small body state.

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