

Practicality of a Solar Shield in Space to Counter Global Warming Roger Angel, Steward Observatory, University of Arizona

A solar shield 2000 km diameter at L1 would deflect enough sunlight to counteract global warming. Such a space-based solution might become an urgent priority, worth trillions of dollars if abrupt climate failures appear otherwise inevitable. We propose to identify near-term research and space missions needed to understand whether a shield could be completed within a few decades at an affordable cost. New optical strategies and concepts for deployment as a cluster of free-flying units, to minimize mass, will be developed. In this way launch from Earth may be affordable, using advanced, high-volume methods with high energy efficiency.

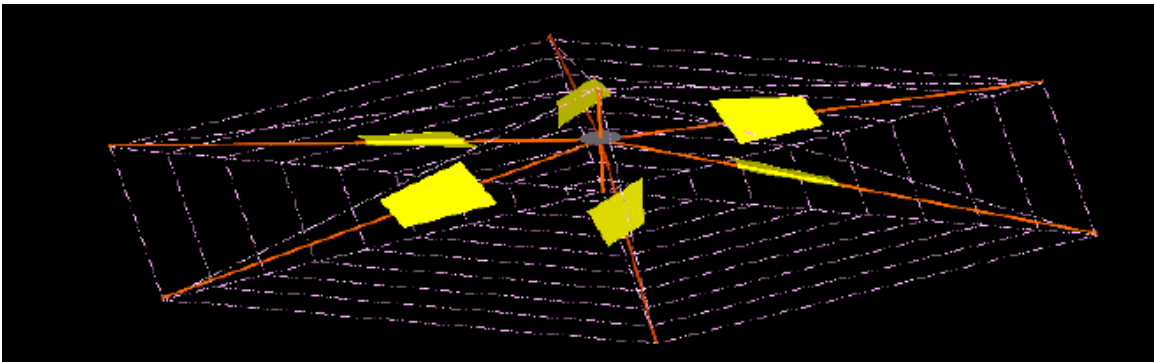


Figure: Preliminary free flyer concept. The main structural elements (in orange) are compression struts. Strings in tension form the flat hexagonal spider web to which the thin glass screen is attached. Six steering mirrors (yellow) are tilted about the radial struts to apply control forces and moments by radiation pressure. The struts are 100 m long.