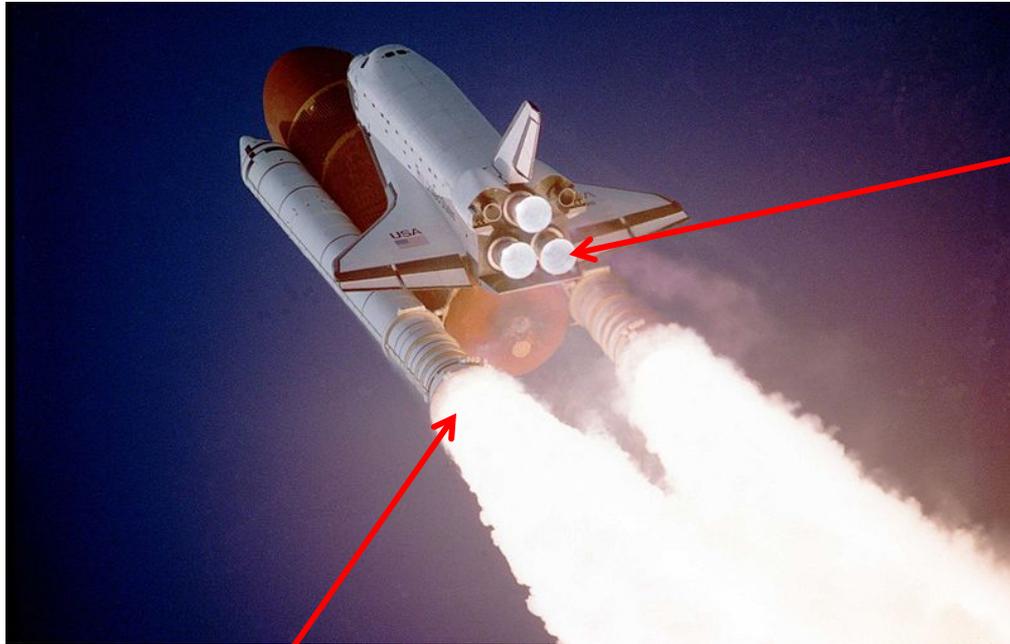


Rocket Propulsion



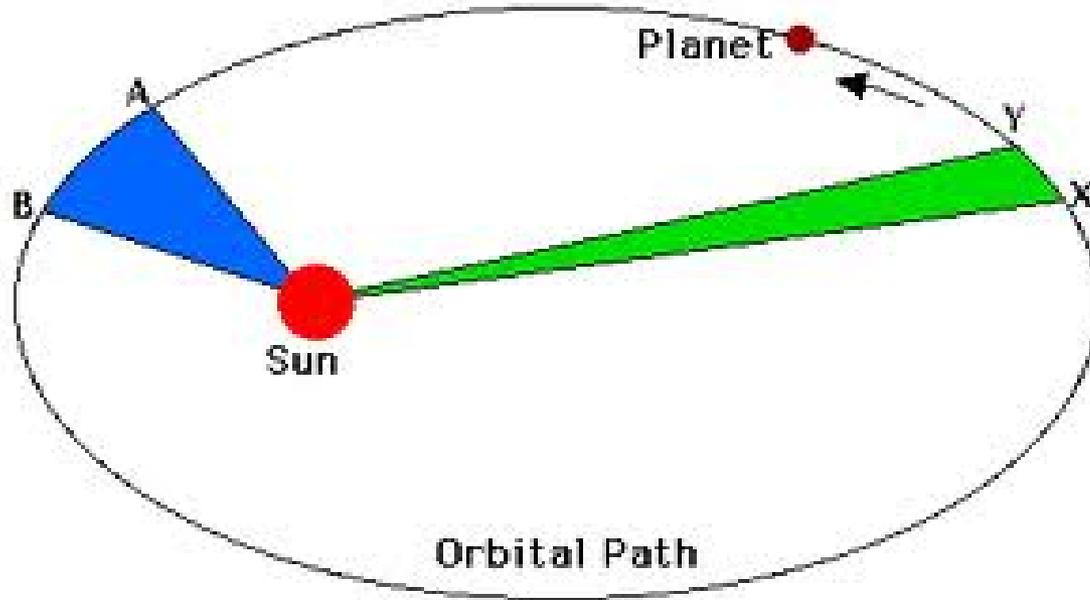
Liquid H₂ + Liquid O₂

Solid rocket motor: Ammonium Perchlorate Composite Propellant
~70% ammonium perchlorate (an oxidizer), ~20% fine aluminum powder (a fuel),
held together in a base of ~10% polybutadiene rubber fuel.

Apollo-Saturn V first stage used kerosene-liquid oxygen (similar to R. Goddard)

Ion Rockets

Kepler's Second Law of Planetary Motion



As each planet moves around the sun, a line drawn from the planet to the sun sweeps out equal area in equal times

$$|\vec{\ell}| = mr^2\omega \text{ is constant}$$