

# Modeling impact outcomes for the Double Asteroid Redirection Test (DART) Mission

- The Double Asteroid Redirection Test (DART) is a demonstration of a kinetic impactor for planetary defense
- DART will impact the moon of the binary asteroid system Didymos in October 2022 and change the orbit period of the secondary
- The DART impact can be simulated ahead of time using various target properties to predict period change ( $\Delta v$ ) and momentum enhancement ( $\beta$ ) of the secondary following impact
  - The actual values can be compared to the simulations to infer the material properties of the asteroid and the efficiency of the deflection.

**Material porosity ( $\phi$ ) and internal structure can significantly affect crater shape, ejecta field, and momentum enhancement from a kinetic impactor.**

