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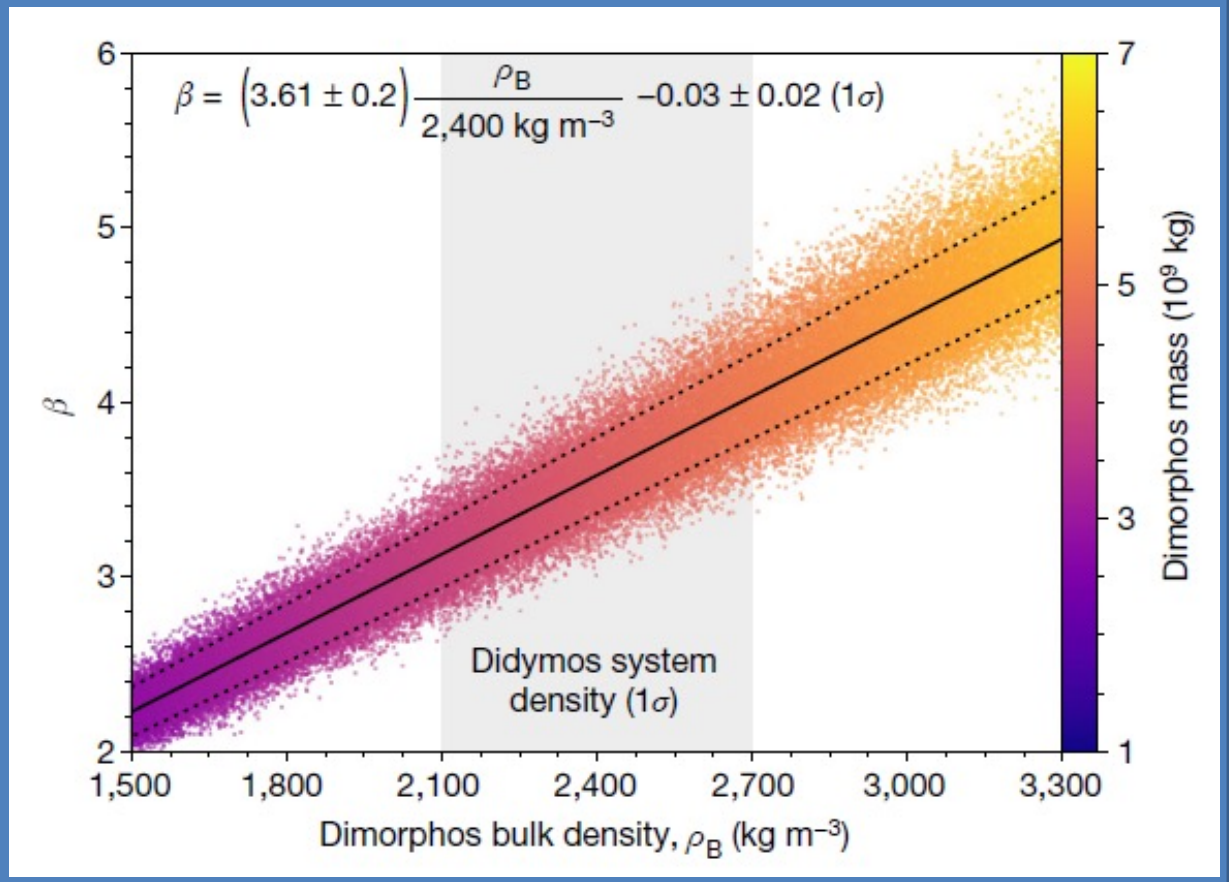
Momentum Transfer from the DART Impact on Dimorphos



Momentum enhancement factor β versus density of Dimorphos, from dynamical Monte Carlo analysis. Individual samples are plotted as points with colors giving the mass of Dimorphos. The linear fit for the mean β is solid black line, with dotted lines giving the $\pm 1\sigma$ confidence interval

- Momentum transfer to Dimorphos from DART kinetic impact was >2x incident momentum
  - Recoil of escaping impact ejecta transferred more momentum than was incident from DART
- The DART kinetic impact was highly effective for asteroid deflection
- For planetary defense, an increased momentum transfer means that a given kinetic impactor can deflect a larger target with the same warning time, or require less warning time to deflect a given target

Cheng A. F. et al. (2023) *Nature* https://doi.org/10.1038/s41586-023-05878-z