AVA one-shot (canted) burn vs split baseline — clean summary

Scope:
  • Keplerian, impulsive burns. Compare: single canted burn (AVA-style) vs. split baseline (pure tangential + separate plane change at the lower speed).

Key results:
  • TLI-like perigee burn (LEO 185 km → translunar ellipse):
    – Δv saving at 3° plane change ≈ 10.5%
    – Δv saving at 5° plane change ≈ 15.1%
  • GTO→GEO (apogee circularization + plane change):
    – Δv saving at 3° plane change ≈ 5.1%
    – Δv saving at 5° plane change ≈ 7.9%

Interpretation:
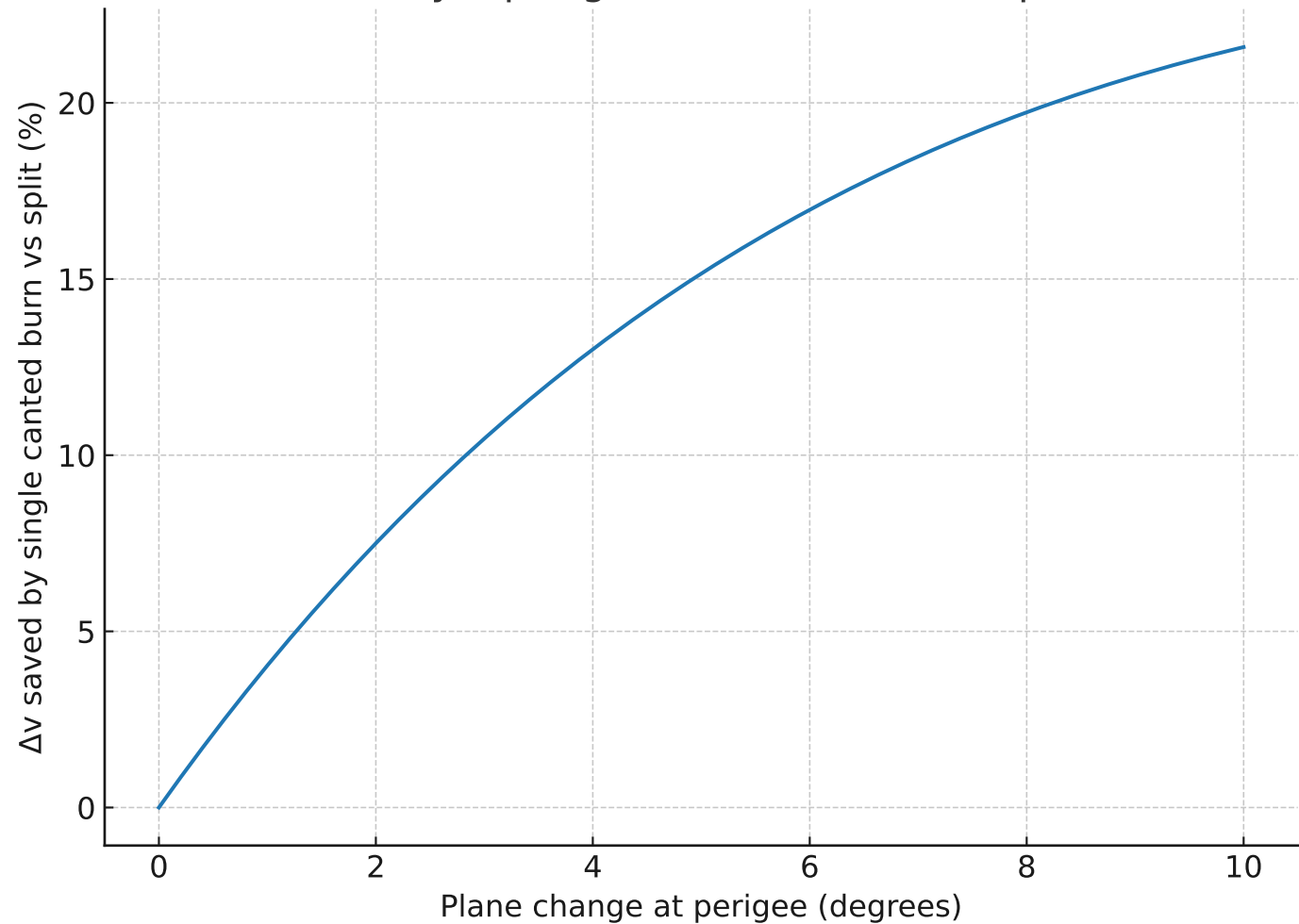 Combining energy + plane change in one canted burn routinely cuts Δv.
  Savings are ~10–16% for 3–5° in TLI; ~6–10% at GEO.

Next steps:
  1) Add J2/SRP to test robustness.
  2) Use AVA as a warm start in a high-fidelity NLP and measure iteration cuts.
  3) Run dispersion Monte Carlo (thrust/pointing/nav errors).

TLI-style perigee burn: canted vs split

GTO→GEO: apogee circularization + plane change