

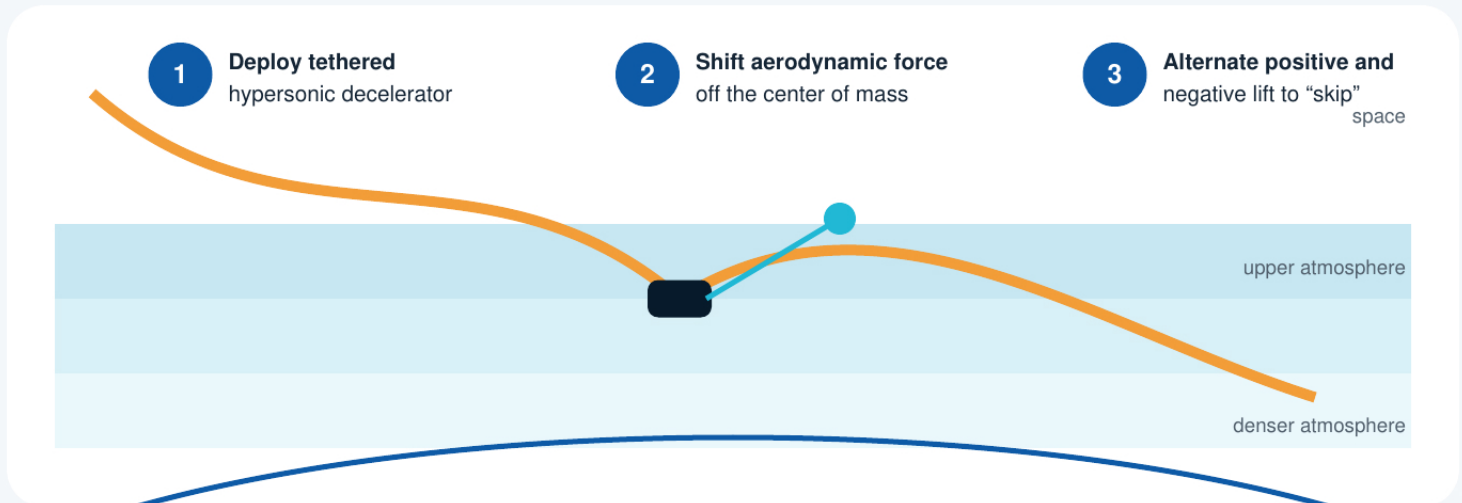
A gentler way home from space

Tether-based aerodynamic control transforms one punishing plunge into a managed sequence of upper-atmosphere “skips.”

PATENTED TECHNOLOGY

U.S. 11,724,836 • 12,286,245 • 12,330,817

HOW IT WORKS



WHAT CHANGES

HEATING

Spread over more time and distance

Lower peak thermal demand may reduce heat-shield stress.

G-LOAD

From abrupt to progressive

A shallower, skipping descent may lower peak acceleration.

CONTROL

Aerodynamic steering without large wings

Tether drag can alter angle of attack and vehicle attitude.

POTENTIAL BENEFITS

Sensitive cargo return

Could improve survivability of biological samples, precision instruments and manufactured materials.

Broader mission flexibility

Applicable to controlled or passive entry concepts and to atmospheric bodies beyond Earth.

Orbital-energy reduction

Atmospheric drag on one or more tethers may assist deorbiting or orbit-circularization maneuvers.

Smaller vehicle burden

May reduce dependence on large aerodynamic surfaces or very high-capacity thermal protection.

STATUS

Patent-described concept. Performance and advantages require vehicle-specific engineering analysis, simulation, deployment testing and flight validation.