

# Replacing Sounding Rockets with Mass Accelerators?

Mark Sipperley; Bruno Matsui, Christine Lawson

Suborbital flight opportunities are historically constrained due to the high cost of sounding rockets, high reliability risks and long lead times. SpinLaunch aims to resolve these constraints and usher in a more sustainable and inexpensive way to conduct hypersonic testing and research capabilities.

With a 100% success rate, SpinLaunch has conducted over 10 electric-powered flight tests utilizing its 33-meter Suborbital Mass Accelerator located just outside the White Sands Missile Range (WSMR) at Spaceport America, in New Mexico.

Founded in 2015, SpinLaunch has evolved into a viable hypersonic launch company. It now operates 2 mass accelerators: a 12-meter Lab Accelerator, a 33-meter Suborbital Accelerator with a 100-meter Orbital Launch System in development for 2026.

The Suborbital Accelerator is SpinLaunch's suborbital launch system. Its current configuration, with a MACH 1.5 release, can achieve an altitude of 30k ft with a payload of capacity of 2kg. At a cost of under \$250k per flight. Next generations of the Suborbital Accelerator configurations, upwards of MACH 6, can achieve an altitude of 80 miles with a payload capacity of 5-25kg depending on altitude desired. System reset is as low as 6 hours. WSMR proximity affords access to its restricted airspace and sensor capabilities. The result is a high-cadence, low-cost, highly reliable suborbital launcher.

Comprised of the key components needed for the Orbital Launch System, the Suborbital Accelerator is a critical stepping stone in SpinLaunch's path to orbit. With a similar flight cost goal. SpinLaunch's ground based Kinetic Launch System will dramatically increase the launch opportunities by providing responsive deployment options to launch small payloads on suborbital trajectories in short call-up time and at orders of magnitude lower costs compared to traditional launch methods.

