High Powered Rocketry

What *is* it?

High Powered Rocketry

What this talk is about…

Awareness of High Powered Rocketry

Principles/design possibilities

Launch videos

Show and tell

High Powered Rocketry

Tripoli Idaho

(the Idaho chapter of the
Tripoli Rocketry Association

The first experiments of a group of Pennsylvania high school students in 1964 was financed by the sale of three WW2 coins from Tripoli, Lebanon.

Tripoli Rocketry Association formed in 1986

Tripoli Idaho formed in 1991

High Powered Rocketry

Who can participate?

A certified member of either the Tripoli Rocketry Association or the National Association of Rocketry.

18 years old!

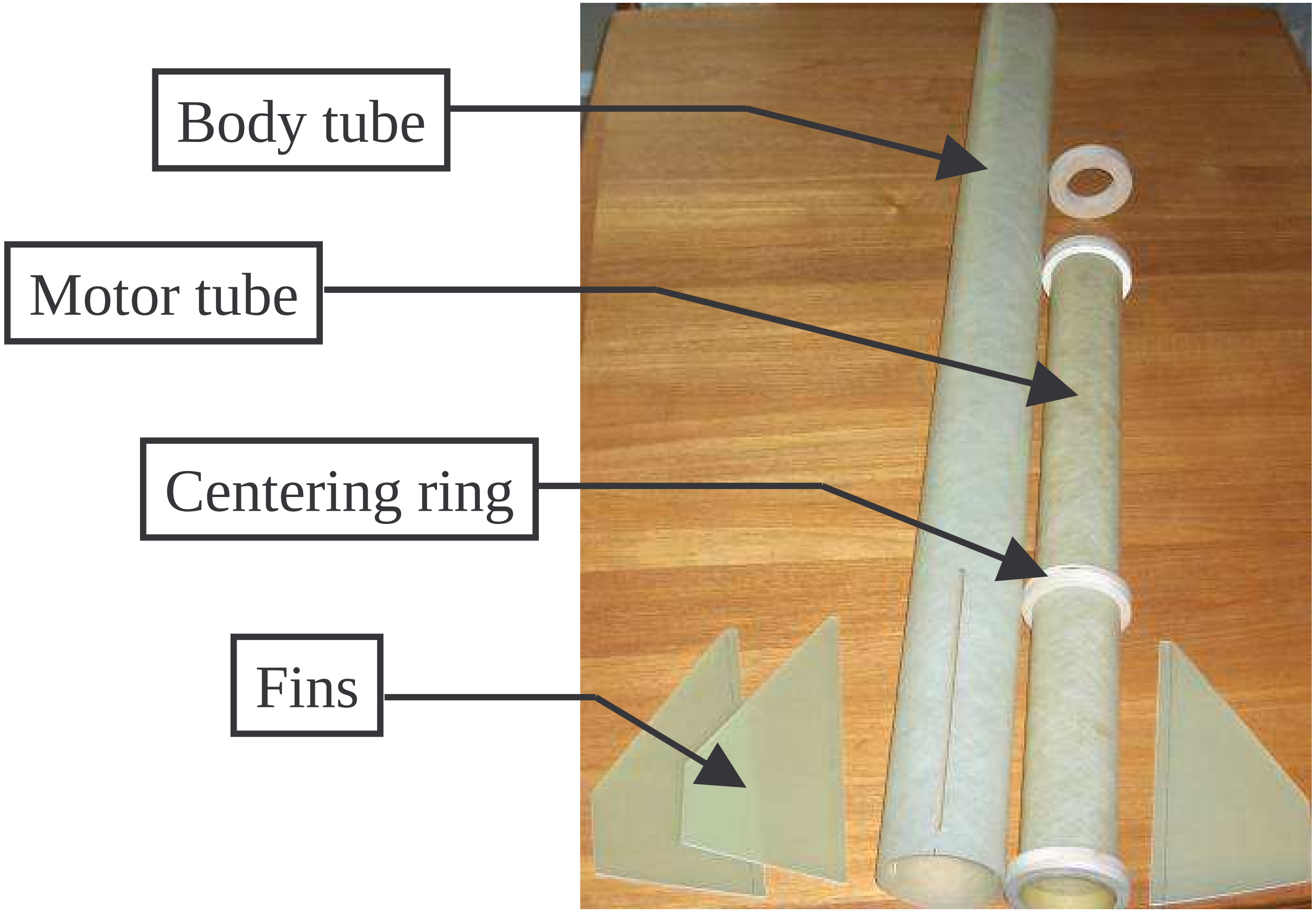
High Powered Rocketry

Construction Materials

- Tubing ⇨ Cardboard or fiberglass
- Nosecone ⇨ Plastic or fiberglass
- Fins ⇨ Plywood or fiberglass

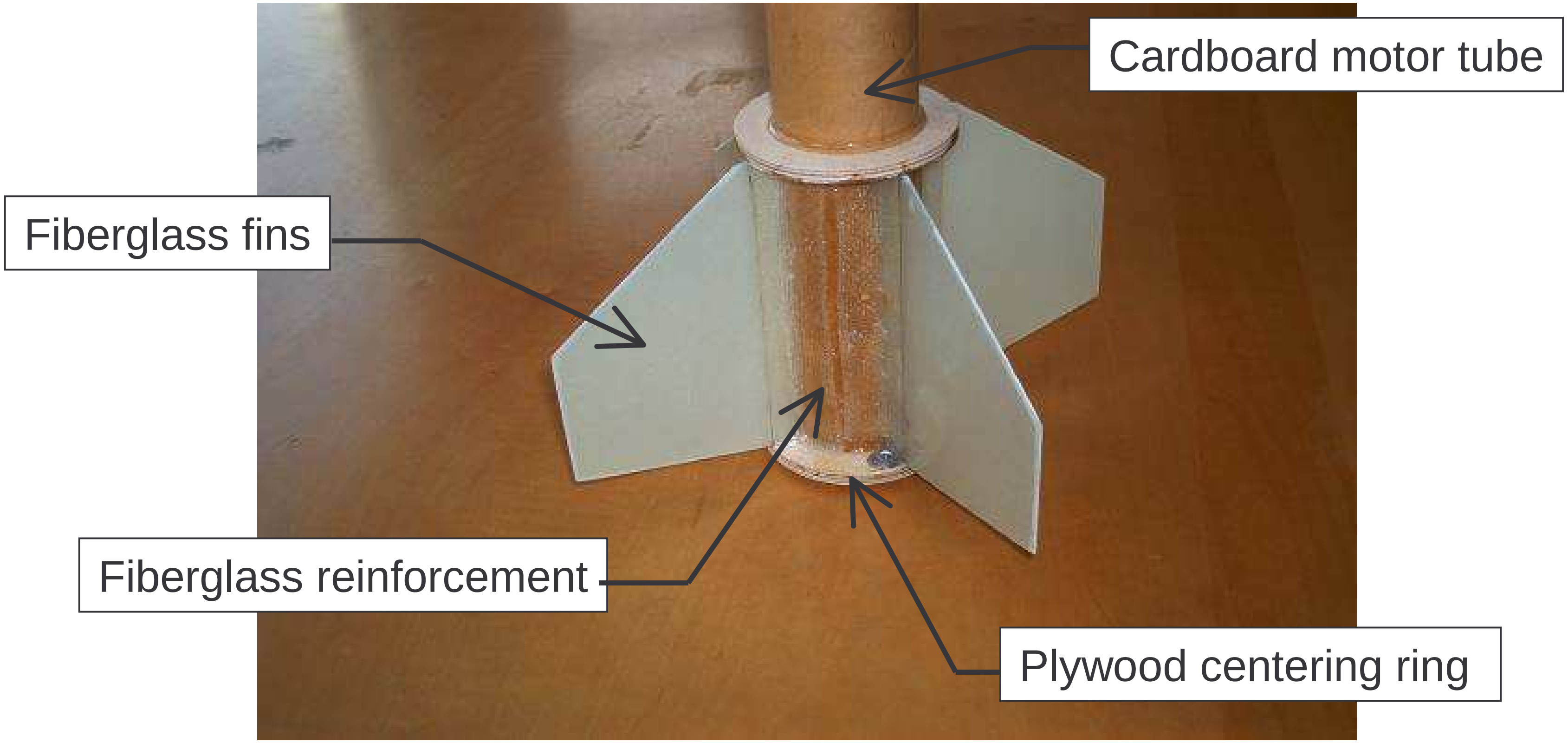
High Powered Rocketry

Construction

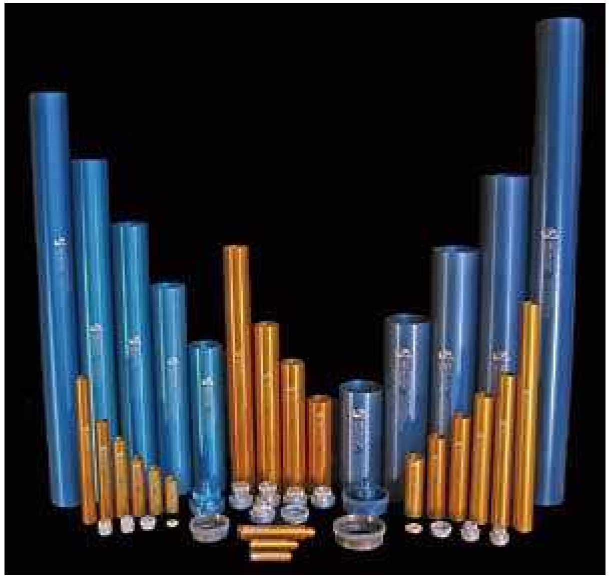


High Powered Rocketry

Construction



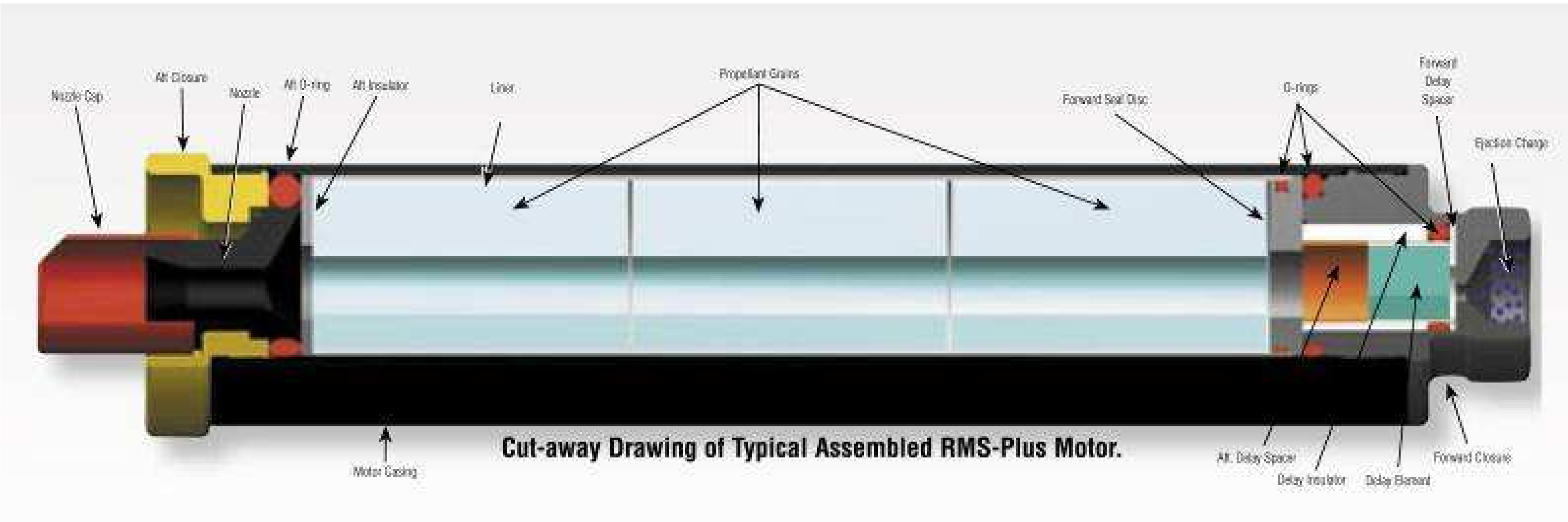
High Powered Rocketry



Motors

<u>Commercially available motors only!</u>

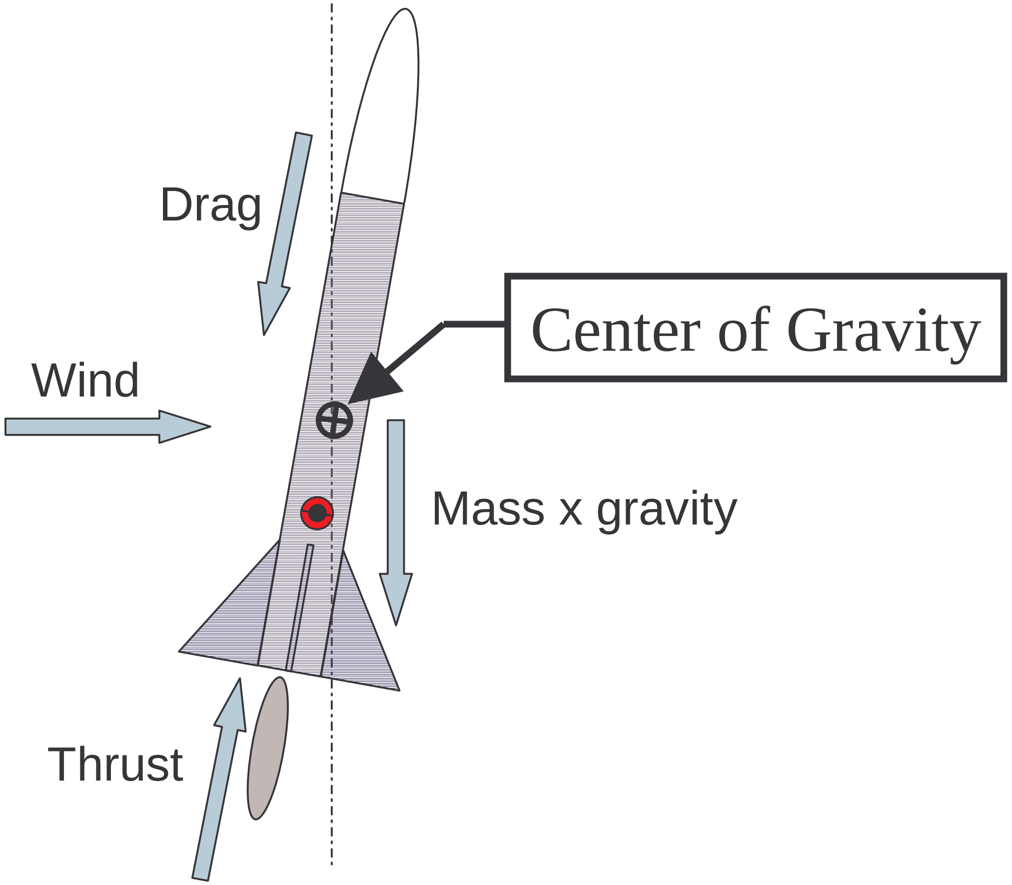
Motor Classification		
	A-D	Model Rockets
	E-G	Low Power
	H-I	High Power (Level 1)
	J-L	High Power (Level 2)
	M-N	High Power (Level 3)



Cut-away Drawing of Typical Assembled RMS-Plus Motor.

High Powered Rocketry

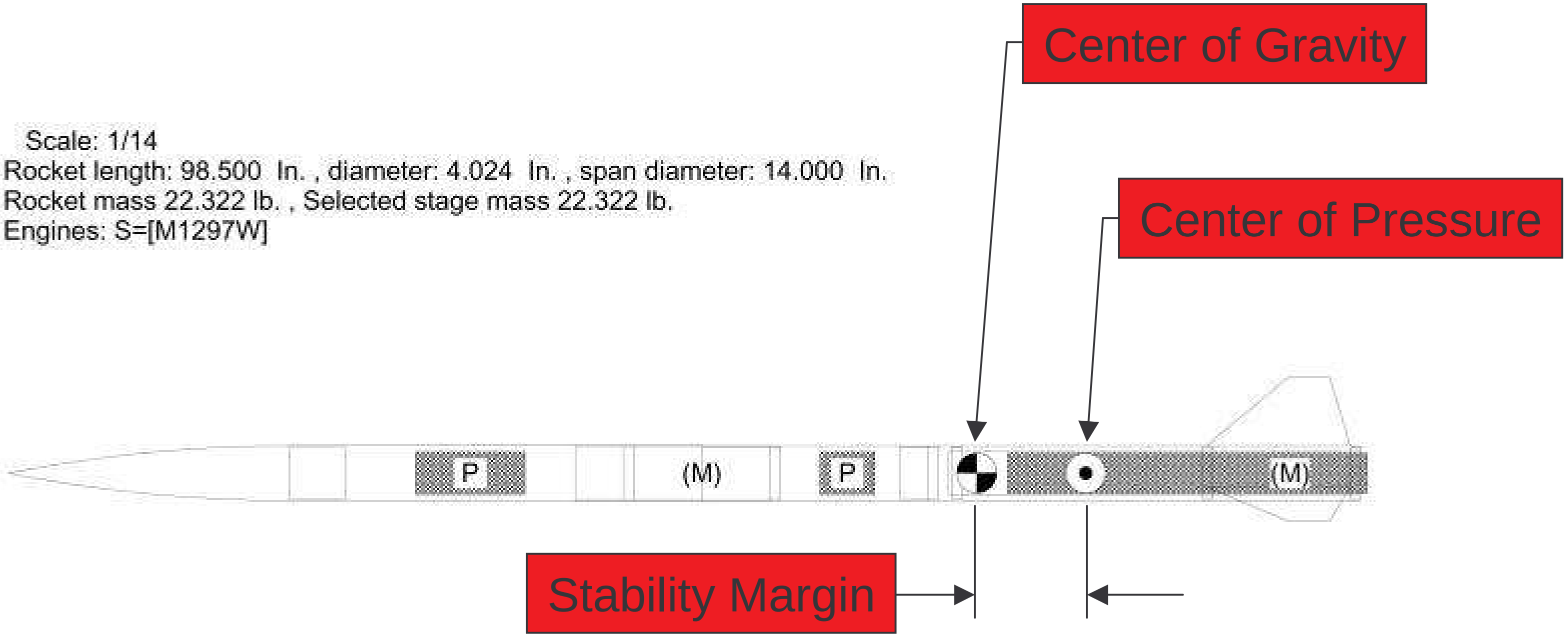
Will the rocket be stable in flight?



High Powered Rocketry

Rocket Design and Simulation

Scale: 1/14
Rocket length: 98.500 In. , diameter: 4.024 In. , span diameter: 14.000 In.
Rocket mass 22.322 lb. , Selected stage mass 22.322 lb.
Engines: S=[M1297W]

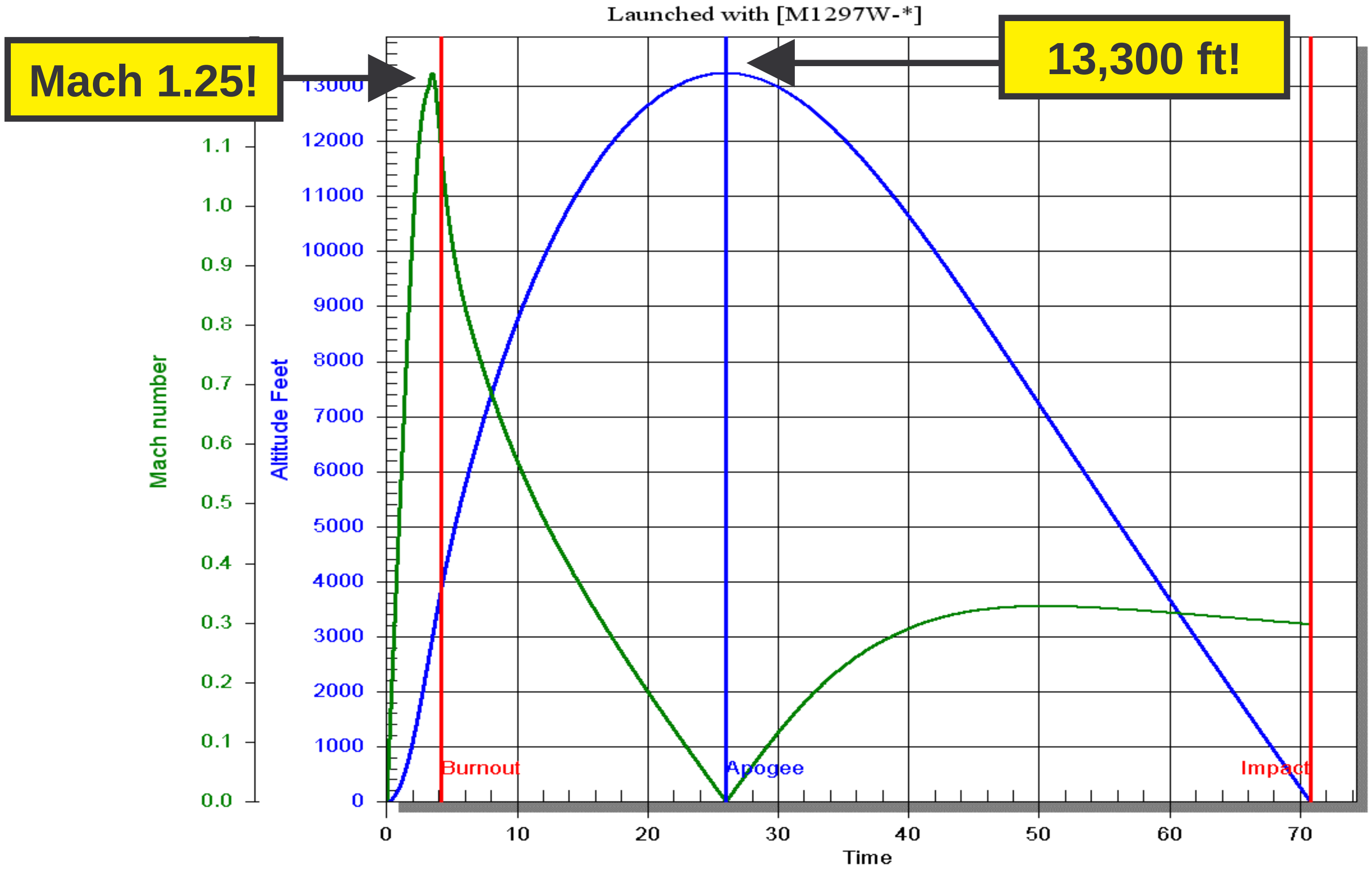


Rocsim is a common stability program

Stability data for Sustainer
Barrowman: CG: 70.563 In., CP: 78.469 In., CNa: 12.535 , Static margin: 1.98, The rocket is stable.

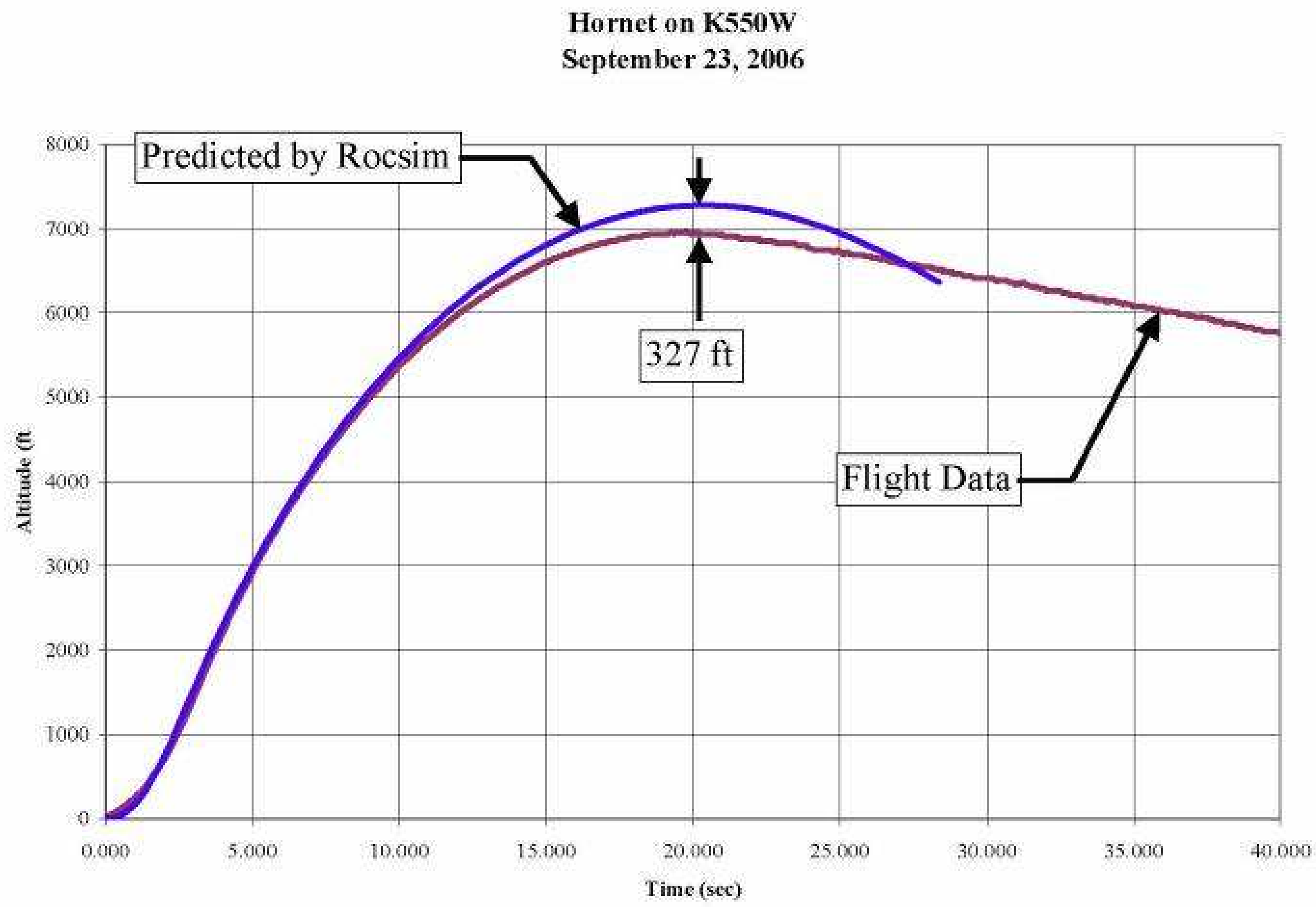
High Powered Rocketry

How high? How fast?



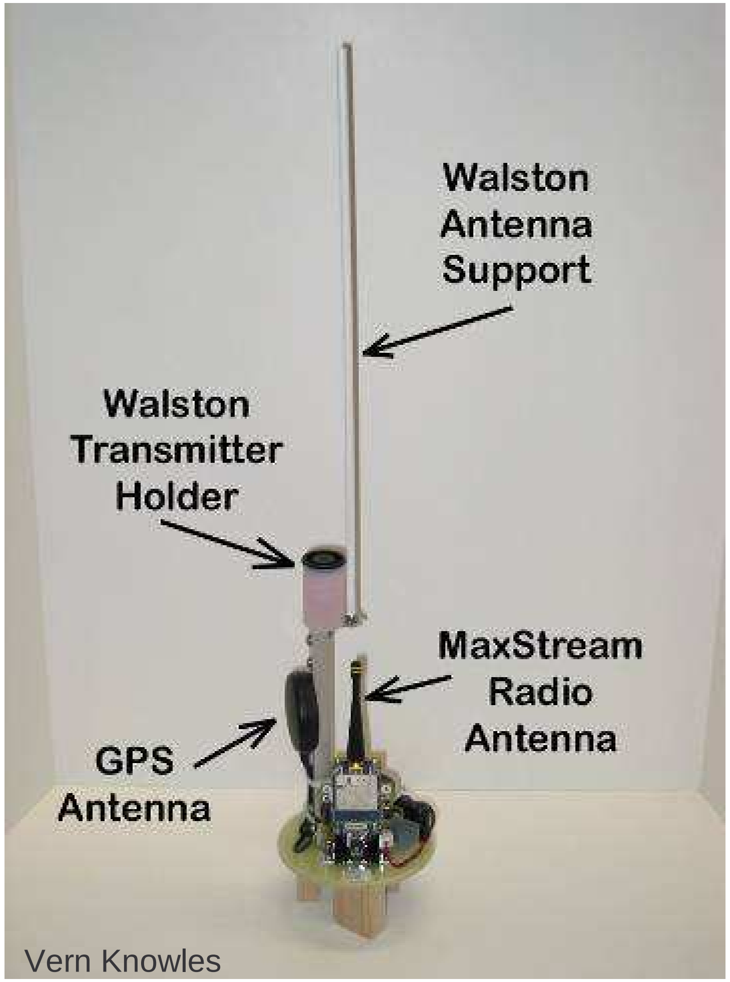
High Powered Rocketry

Predicted vs. actual



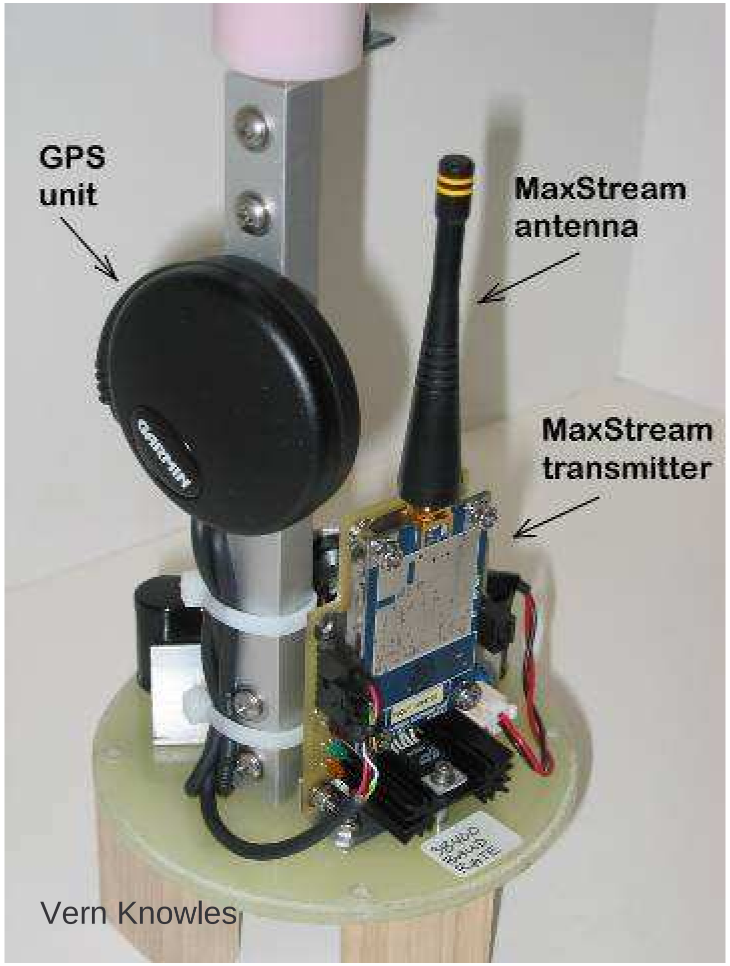
High Powered Rocketry

Telemetry– locating transmitter



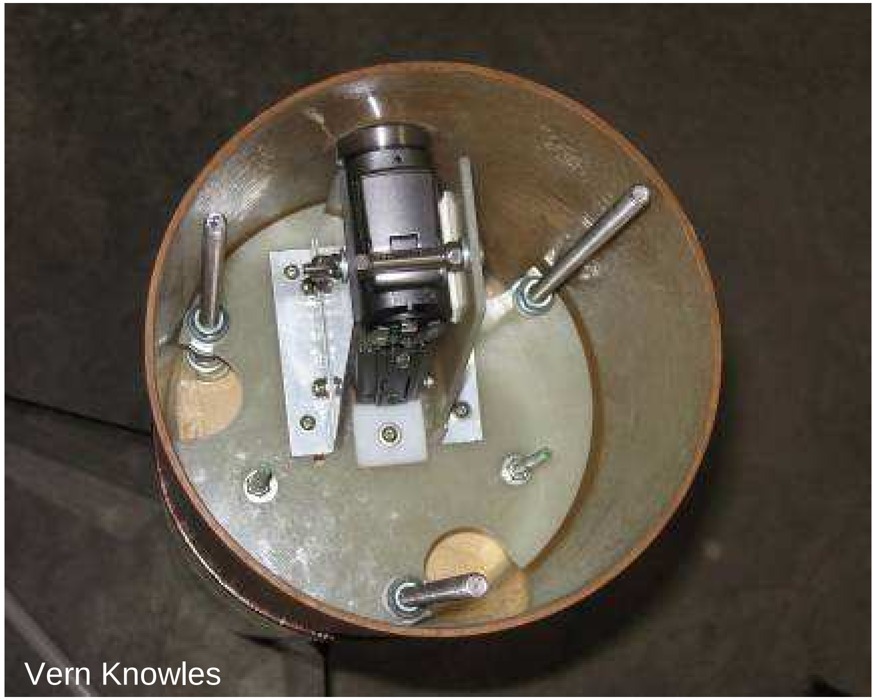
High Powered Rocketry

Telemetry-- GPS



High Powered Rocketry

Video



High Powered Rocketry

Other resources:

tripoliidaho.org — Next launch: October 14th – 15th

vernk.net

rocketryonline.com

tripoli.org — Tripoli Rocketry Association

nar.org — National Association of Rocketry

High Powered Rocketry

ARLISS Participants

Georgia Institute of Technology
Kyushu University
Nihon University
Tohoku University
Tokyo Institute Of Technology
University of Nevada, Reno
University of Texas at Austin
University of Tokyo
Soka University
Stanford University

High Powered Rocketry

What is ARLISS?

The ARLISS Project is a collaborative effort between students and faculty at Stanford University Space Systems Development Program and other educational institutions, and high power rocketry enthusiasts in Northern California, to build, launch, test and recover prototype satellites, miniaturized to fit inside a soft drink can (hence "CanSats") in preparation for an Earth orbit or Mars orbit space launch.

ARLISS and the CanSat project challenge innovative students to get hands-on experience in the life-cycle (one year or less) of a space project. Each CanSat team will design and build one or more satellites, and travel to the launch site in Black Rock, Nevada to supervise preparation, launch, telemetry download and safe recovery of their experiments and data.

The ARLISS rocketry group provides launch vehicles, each capable of lofting and safely deploying three CanSats under parachute at an altitude of 12,000' AGL, affording each CanSat a "hang time" in the air of about 15 minutes for experiments, simulating a horizon-to-horizon low orbit pass.

If you have any questions about CanSat and Open Class projects and ARLISS please contact the Prof. Robert Twiggs or any of the participants referred to in this web site.

High Powered Rocketry

Rocket video

by Vern Knowles

and Frank Ross