

DETERMINING THE MACH NUMBER

$$M^2 = \left\{ \left(\frac{2c_v}{R_a} \right) \left[\left(\frac{p+q}{p} \right)^{R_a/c_p} - 1 \right] \right\}$$

- LAMS provides a correction Δp to be added to p and subtracted from q (affecting only the denominator).
- Measured temperature is not needed (except indirectly as it enters fitting to find Δp).
- Once calibrated, the above equation for M^2 can be used to find the temperature, independent of a temperature probe, using only pressure measurements and v determined by LAMS:

$$T_{LAMS} = v^2 / (\gamma R_a M^2)$$