

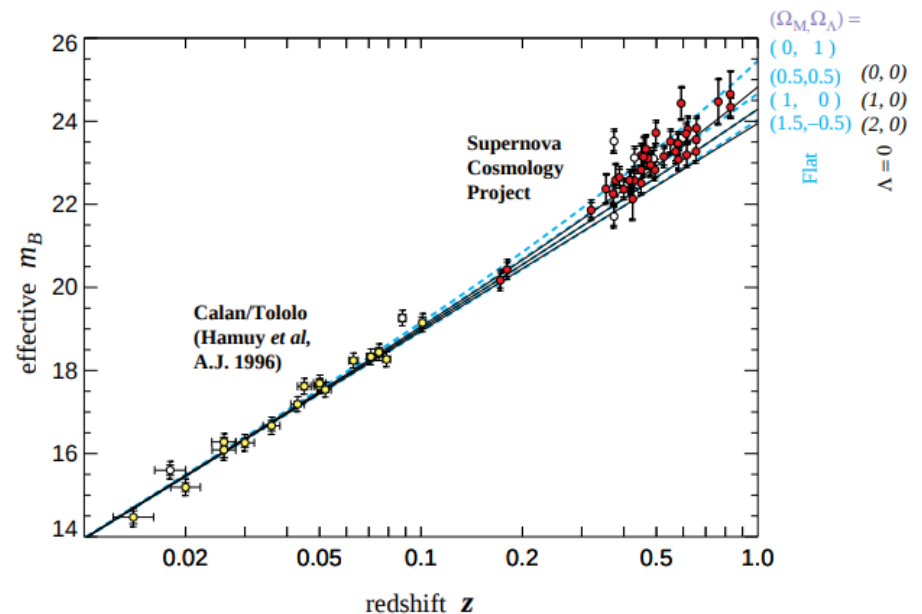
Measurements of Omega and Lambda from 42 High-Redshift Supernovae (Perlmutter 1999)

Recreating this classic cosmology paper in a Jupyter Notebook

- Used high- z supernovae as standard candles to probe cosmological constants
- Constrained mass density Ω_M and cosmological-constant energy density Ω_Λ
- Results are consistent with a positive, non-zero cosmological constant

This classic paper establishes that the expansion of the universe is accelerating, and puts constraints on the value of the mass density and cosmological constant energy density.

Key results to be replicated are shown at right.



Proposed Solution

- Query for Type 1a SN with high redshift
- Make module to standardize SN peak magnitudes with width-luminosity relation
- Plot M_B vs Z
- Make module to calculate Ω_M and Ω_Λ
- Make interactive widget for best fit confidence regions in $\Omega_M - \Omega_\Lambda$ plane for variant analyses (Fig 5 in paper)

