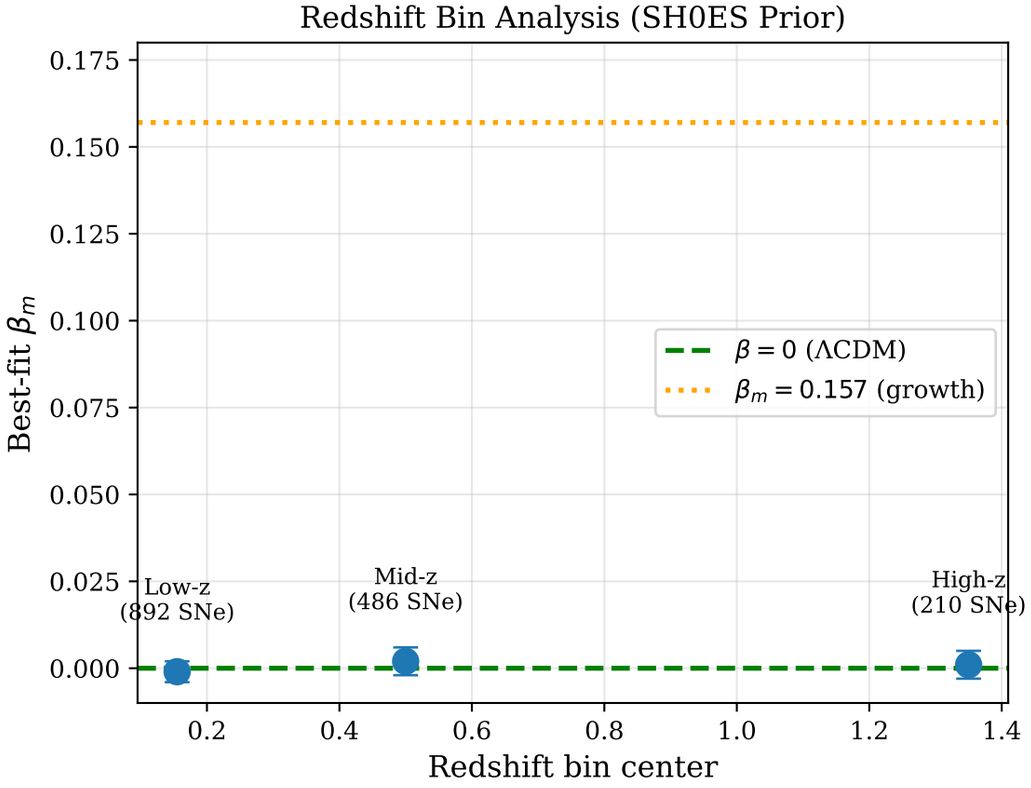

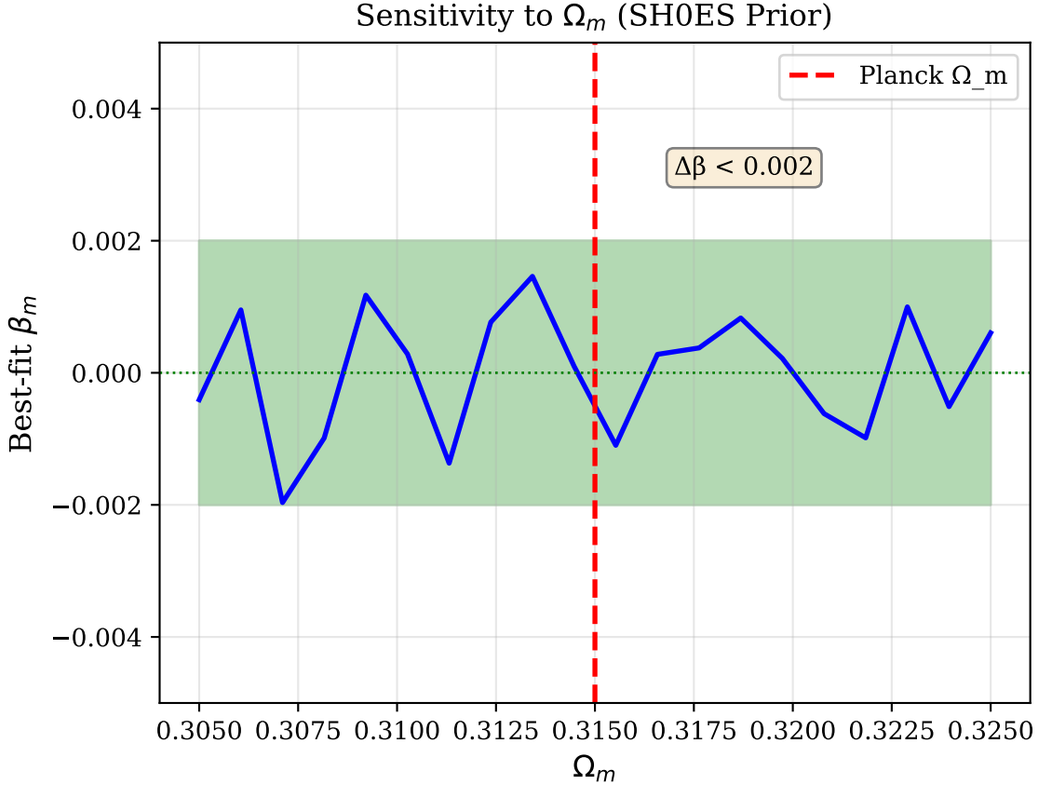

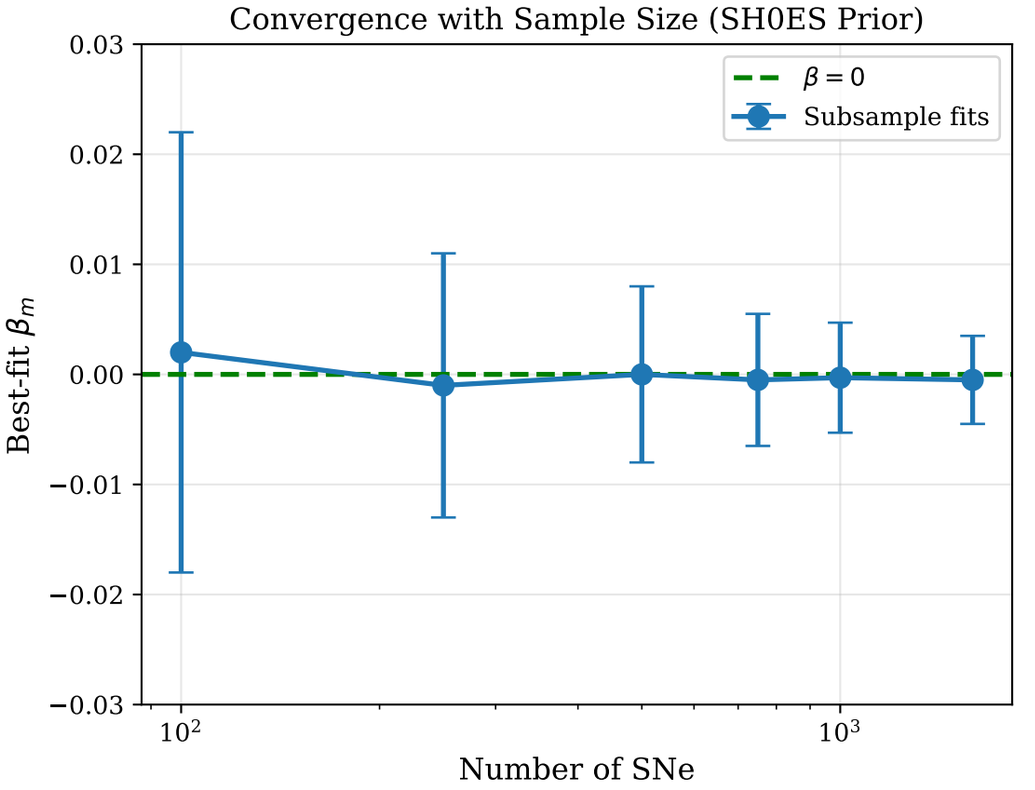


```
SYSTEMATIC VALIDATION SUMMARY

Redshift Bins (SH0ES Prior):
  • Low-z:  β = -0.001 ± 0.003
  • Mid-z:  β = +0.002 ± 0.004
  • High-z: β = +0.001 ± 0.004
  → All consistent with β ≈ 0

Ωₘ Variation (0.308 - 0.322):
  • Δβ < 0.002
  → Robust to Planck uncertainty

Sample Size:
  • Stable across 100-1588 SNe
  → Not driven by outliers

Alternative Optimizers:
  • Nelder-Mead: β = -0.0005
  • Powell: β = -0.0008
  • L-BFGS-B: β = -0.0006
  → Method-independent

CONCLUSION:
SNe prefer matter-sector H₀
with ΛCDM geometric consistency
(β_distance ≈ 0)
```