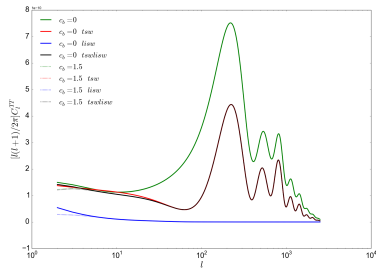


CLASS and hi_class exercises

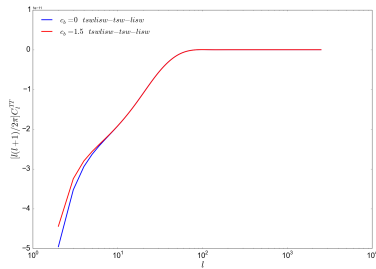
Christiane Lorenz, Pablo Villanueva, Victoria Yankelevich

March 17, 2017

Exercise 2

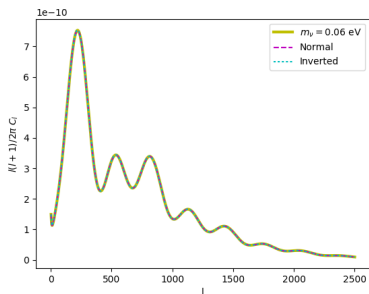


Multipoles with different temperature contributions

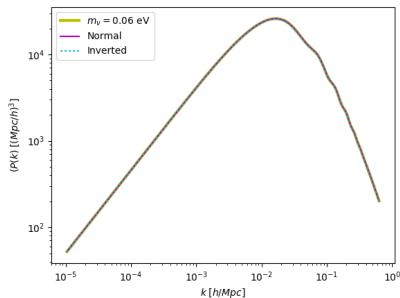


Cross-covariance between SW and ISW effects

Exercise 3



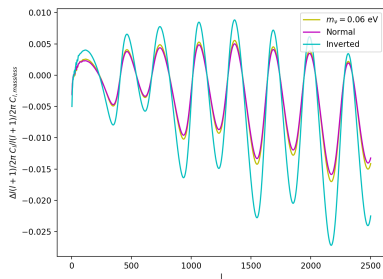
CMB temperature power spectrum



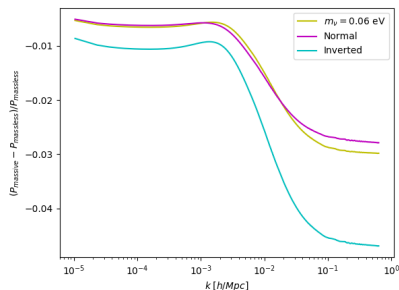
Matter power spectrum

- 1 Normal Hierarchy: $m_1 \ll m_2 < m_3$ with $m_2 \simeq 0.0087$ eV, $m_3 \simeq 0.050$ eV.
- 2 Inverted Hierarchy: $m_3 \ll m_1 < m_2$ with $m_1 \simeq m_2 \simeq 0.049$ eV.

Exercise 3



CMB temperature power spectrum



Matter power spectrum

- 1 Normal Hierarchy: $m_1 \ll m_2 < m_3$ with $m_2 \simeq 0.0087$ eV, $m_3 \simeq 0.050$ eV.
- 2 Inverted Hierarchy: $m_3 \ll m_1 < m_2$ with $m_1 \simeq m_2 \simeq 0.049$ eV.

Neutrino energy densities

