

The Leray spectral sequence: Complexes and double complexes. Filtrations and gradings. Spectral sequences, associated to a complex and to a double complex. Main convergence result for spectral sequences. Grothendieck and Leray spectral sequences. An application: higher direct images of coherent sheaves via proper morphisms.

References:

C. Weibel. An introduction to homological algebra

M. Greenberg. Spectral sequences

www.math.mcgill.ca/goren/SeminarOnCohomology/specseq.pdf

J. Wang. Higher direct images of coherent sheaves under a proper morphism. math.uchicago.edu/~jpwang/writings/ProperRf.pdf