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Study on Leray Spectral Sequence in Homological Algebraic Structures

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Abstract: *The Leray spectral sequence is a foundational computational tool in algebraic topology, geometry, and homological algebra. Originating in sheaf co homology, it effectively organizes complex homological information through a filtration associated with a continuous map. This review presents key constructions, underlying principles, and prominent applications of the Leray spectral sequence within homological algebraic structures, especially in the context of derived functions, sheaf co homology, group co homology, and algebraic geometry.*

Keywords: Leray spectral sequence, homological algebra, derived functors.