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*Homological Tools for Understanding Dynamical Systems*

We will define a topological context fruitful in obtaining information on the behaviour of a wide range of dynamical systems. We will present an overview of results obtained in the past ten years for Morse-Smale, Morse-Bott, Novikov and Gutierrez-Sotomayor flows. The overarching idea is to define an appropriate filtered chain complex generated by invariant sets. Conley's theory permits to rise above the differentiability requirements of the phase space as well as to consider richer isolated invariant sets. With these tools, we consider as our major algebraic apparatus a spectral sequence of the given filtered chain complex. The unfolding of the spectral sequence exhibits a rich algebraic procedure and provides much insight into dynamical properties (bifurcation, cancellation phenomena etc.) of a continuation of the dynamical systems being studied. Our goal is to present this algebraic-dynamical set-up at an introductory level.

## References

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