A Gysin sequence for manifolds with $\mathbb{R}$-action

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Abstract: I will show how to associate an exact sequence involving the cohomology groups of a pair of differential complexes to any pair $(\mathcal{N}, \mathcal{T})$ where $\mathcal{N}$ is a closed connected smooth manifold and $\mathcal{T}$ a real nowhere vanishing smooth vector field on $\mathcal{N}$ that admits an invariant metric. The orbits of $\mathcal{T}$ need not be closed. The sequence is a natural generalization of the classical Gysin sequence (for circle bundles) in real cohomology. Time permitting, I will also discuss estimates for the eigenvalues of a differential operator relevant in the construction of the sequence.