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Homology of Finite Subset Spaces

We introduce the tools of homological algebra into the study of the homology of finite subset spaces X_n, $n \geq 1$. After reviewing and expanding on some known and less well-known results about the finite subset spaces of a simplicial complex X, we introduce a spectral sequence for "generalized double mapping cylinders" which in the case of finite subset spaces reduces to a spectral sequence first investigated by Ross Biro in his Stanford thesis. This spectral sequence which is made out from the symmetric products of X and its suspension provides a powerful tool for calculations; an assertion we illustrate by working out the rational and mod-2 homology of finite subset spaces of spheres.

This is joint work with Denis Sjerve (Vancouver).