

Vera Tonic, Research statement

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My research so far has been in geometric topology, more precisely it involved resolution theorems in covering dimension (\dim) and cohomological dimension theory, but I am also interested in asymptotic dimension theory.

Asymptotic dimension asdim was introduced by Mikhail Gromov as a large scale analog of covering dimension in coarse geometry.

Since asdim is preserved by coarse equivalence between metric spaces, for any finitely generated group Γ its $\text{asdim} \Gamma$ is invariant of the choice of a generating set for Γ ((Γ, d_{S_1}) and (Γ, d_{S_2}) being coarsely equivalent, for d_{S_1} and d_{S_2} corresponding word metrics, and S_1, S_2 finite generating sets for Γ).

My particular interest is in connections between asdim and \dim , like the following formula for hyperbolic groups, connecting asymptotic dimension of a hyperbolic group with the covering dimension of its boundary at infinity: $\text{asdim} G = \dim(\partial G) + 1$.