

One-dimensional geodesic spaces, Part II: Marked length rigidity

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We prove a marked-length spectrum rigidity result for geodesic length spaces of topological dimension one. We show that for two such spaces, a homomorphism $\phi : \pi_1(X) \rightarrow \pi_1(Y)$ with the property that the lengths of the geodesic representatives of γ and $\phi(\gamma)$ are the same implies an isometry between the π_1 -hulls of X and Y which induces the underlying homomorphism ϕ . This form of spectral rigidity holds in several ‘non-wild’ geometric settings, such as for non-positively curved compact surfaces and compact locally symmetric spaces. This talk builds on the structure theory for the π_1 -hulls developed in the talk “One-dimensional geodesic spaces, Part I: Structure theory” by Jean-François Lafont, also in this session.