

Affine maps between CAT(0) Spaces

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Abstract. To what extent do the geodesics in a space determine the geometry of the space? To study this question, we investigate “affine maps” – continuous functions between metric spaces which preserve geodesics and rescale linearly along each. Classical work, culminating with a recent Theorem of Lytchak completely classifies all possible affine functions from Riemannian manifolds into metric spaces.

In the CAT(0) setting, an affine map between CAT(0) spaces determines a real-valued function of the boundary, which behaves very nicely with respect to both the visual topology and Tits metric. We use this to classify affine maps of CAT(0) spaces admitting a geometric group action.

(Joint work with Hanna Bennett and Ralf Spatzier.)