Embedding of the Higson compactification into the product of adelic solenoids

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The Higson compactification $\bar{X}$ of X is defined by means of bounded slowly oscillating continuous functions $f : X \to \mathbb{R}$. If C_h is the set of all such functions, then $\bar{X}$ is homeomorphic to the closure of X under the embedding

$$(f)_{f \in C_h} : X \to \prod_{f \in C_h} [\inf f, \sup f].$$

Theorem. *Every simply connected proper geodesic metric space X admits an embedding of its Higson compactification into the product of adelic solenoids*

$$F : \bar{X} \to \prod_{\mathcal{A}} \Sigma_\infty$$

that induces an isomorphism of 1-dimensional Čech cohomology.

As a corollary we obtain the following

Theorem. *For any p and any simply connected finite dimensional proper geodesic metric space X its Higson compactification can be essentially embedded into the product of Knaster continua K_p.*

We recall that the Knaster continuum $K_p = \Sigma_p/\!\sim$ is the quotient space under the identification $x \sim -x$.

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