Categorical and metric density

Speaker: Tom Leinster
   University of Edinburgh, UK
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Abstract. When metric spaces are viewed as enriched categories, the categorical notion of density does not coincide with the ordinary topological notion. This prompts two questions. First, what does categorical density mean for metric spaces? And second, does the condition of topological density generalize from metric spaces to arbitrary enriched categories? Both questions were considered in Lawvere's 1973 metric spaces paper, but only very briefly: there is a lot more to say. Some satisfying new answers have recently been uncovered by my student Adrián Doña Mateo, which I will explain.