

1053-03-49

Erik Palmgren* (palmgren@math.uu.se), Uppsala University, Department of Mathematics,
P.O.Box 480, 75106 Uppsala, Sweden. *Constructive aspects of maps between open sublocales.*

It is of interest to characterize the maps between open sublocales of two localic completions of locally compact metric spaces X and Y

$$M(X)_{|U} \rightarrow M(Y)_{|V}. \tag{1}$$

The characterization is not trivial from a constructive point of view. As shown by author the maps $M(X) \rightarrow M(\mathbb{R})_{|(0,\infty)}$ correspond to continuous functions $X \rightarrow \mathbb{R}$ that on each open ball has a positive uniform lower bound, rather than positive functions. Constructively, there is a distinction: Julian and Richman (improving on a result by Specker) gives a recursive example of a uniformly continuous positive function $[0, 1] \rightarrow \mathbb{R}$ that has no uniform positive lower bound. These considerations makes it clear that the set of continuous point maps $\text{Pt}(U) \rightarrow \text{Pt}(V)$ between open subspaces of locally compact metric spaces has to meet some extra conditions to be in 1-1 correspondence to maps in (1). We provide such conditions. For open subspaces that are given by metric complements these are particularly simple. (Received July 22, 2009)