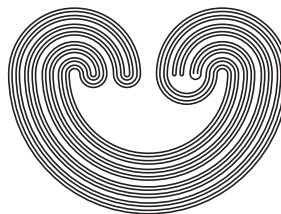

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by

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LOCAL COMPACTNESS IN MT-ALGEBRAS

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ABSTRACT. In our previous work, we introduced McKinsey–Tarski algebras (MT-algebras for short) as an alternative pointfree approach to topology. Here, we study local compactness in MT-algebras. We establish the Hofmann–Mislove theorem for sober MT-algebras, which we use to develop the MT-algebra versions of such well-known dualities in pointfree topology as Hofmann–Lawson, Isbell, and Stone dualities. This yields a new perspective on these classic results.

1. INTRODUCTION

In pointfree topology, topological spaces are studied through their frames of open sets ([23], [29], [30]). There is a classic dual adjunction between the categories **Frm** of frames and **Top** of topological spaces, which restricts to a dual equivalence between the full subcategories **SFrm** of spatial frames and **Sob** of sober spaces. Further restrictions yield the following well-known dualities in pointfree topology:

- *Hofmann–Lawson duality* between the categories **ContFrm** of continuous frames and **LCSob** of locally compact sober spaces [18].
- *Isbell duality* between the categories **KRegFrm** of compact regular frames and **KHaus** of compact Hausdorff spaces [21] (see also [6]).

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