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MONOTONE OPEN IMAGES OF 0-SPACES

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ABSTRACT. A 0-*space* is a completely regular Hausdorff space possessing a compactification with zero-dimensional remainder. The class of almost rimcompact spaces is intermediate between the class of rimcompact spaces and that of 0-spaces.

It is known that rimcompactness is preserved under monotone open maps. In this paper it is shown that the properties of almost rimcompactness and of being a 0-space are preserved under monotone open maps.

1. Introduction and known results. All spaces considered are completely regular and Hausdorff. Recall that a space is *rimcompact* if it possesses a base of open sets with compact boundaries [**8**]. Monotone maps, generally with some additional property, have appeared in the investigation of the preservation of rimcompactness. For example, if Y is the image of a rimcompact space under either a monotone open map or a monotone quotient map for which preimages of points have compact boundaries, then Y is rimcompact ([**6**] and [**1**, 3.4], respectively). The second result with "rimcompact" replaced either by "almost rimcompact" or "0-space" was proved in [**3**]. As mentioned in the abstract, the result for monotone open maps with "rimcompact" replaced by either "almost rimcompact" or "0-space" is proved in this paper.

The main results appear in Section 2. In the remainder of this section, we present some terminology and known results. A *map* is a continuous surjection. A function $f : X \to Y$ is *closed* (*open*) if whenever F is closed (open) in X, $f[F]$ is closed (open) in Y, and *monotone* if $f^{\leftarrow}(y)$ is connected for each $y \in Y$.

The maximum compactification of a space X, the *Stone-Čech compactification* of X, is denoted by βX (where the partial ordering on the family of compactifications of X is the usual). If KX is a compactification of X, then $KX \backslash X$ is the *remainder* of KX. If $f : X \to Y$ is a

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