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$C(X)$ can sometimes determine X without X being realcompact

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Abstract: As usual $C(X)$ will denote the ring of real-valued continuous functions on a Tychonoff space X . It is well-known that if X and Y are realcompact spaces such that $C(X)$ and $C(Y)$ are isomorphic, then X and Y are homeomorphic; that is $C(X)$ determines X . The restriction to realcompact spaces stems from the fact that $C(X)$ and $C(\nu X)$ are isomorphic, where νX is the (Hewitt) realcompactification of X . In this note, a class of locally compact spaces X that includes properly the class of locally compact realcompact spaces is exhibited such that $C(X)$ determines X . The problem of getting similar results for other restricted classes of generalized realcompact spaces is posed.

Keywords: nearly realcompact space, fast set, SRM ideal, continuous functions with pseudocompact support, locally compact, locally pseudocompact

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