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*Continuous (approximate) roots of continuous functions on compacta*

For a compact Hausdorff space $X$, $C(X)$ denotes the ring of all continuous complex-valued functions on $X$. The ring $C(X)$ is said to be *algebraically closed* if each monic polynomial with $C(X)$-coefficients has a root in $C(X)$. Starting with a classical theorem due to Countryman, Jr., we discuss a problem on topological characterizations of $X$ with $C(X)$ being algebraically closed. Also the existence of "approximate roots" and related topics will be discussed.

The present talk is based on joint works with A. Chigogidze, A. Karasev, T. Miura and V. Valov.