Completeness properties on $C_p(X, Y)$ spaces

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In this talk we will present some results which have to do with the characterization of several kinds of pseudocompleteness and compactness properties in spaces of continuous functions of the form $C_p(X, Y)$. In particular, we prove that for every space X and every separable metrizable topological group G for which $C_p(X, G)$ is dense in Y^G, $C_p(X, G)$ is weakly α-favorable if and only if every countable subset N of X is discrete and C_G-embedded in X.

Moreover, we obtain two generalizations of a result that is due to V.V. Tkachuk:

Theorem *Let G be a separable completely metrizable topological group. If H is a dense subgroup of G^X and H is homeomorphic to G^Y for some set Y, then $H = G^X$.*

Theorem *Let G be a realcompact Čech-complete weakly α-favorable topological group with countable pseudocharacter and let X be regular $C^G_{<\omega}$-discrete. Then, $C_p(X, G) \cong G^\kappa$ if and only if X is a discrete space of cardinality κ.*

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