Summary: Let $X$ be a topological space, $(Y, \mathfrak{U})$ a uniform space and $(\mathcal{Z}(Y), \check{\mathfrak{U}})$ the space of all nonempty compact subsets of $Y$ with the induced uniformity. A sequence $\{F_n : n \geq 1\}$ of multivalued maps of $X$ with values in $\mathcal{Z}(Y)$ is called quasi-uniformly convergent to a multivalued map $F$ if for every $U \in \mathfrak{U}$ and $n \geq 1$ there exists a natural number $k$ such that for each $x \in X$ there is $j \in \{0, 1, \ldots, k\}$ for which $F_{n+j}(x) \subset U[F(x)]$ and $F(x) \subset U[F_{n+j}(x)]$. The quasi-uniform convergence preserves the upper and lower semicontinuity, and under some assumptions on $X$ and $Y$, also the measurability of the Baire class $\alpha$. If $X$ is a Baire space and $F_n$ are upper or lower $\mathfrak{U}$-quasi-continuous, then the function $F : X \to (\mathcal{Z}(Y), \check{\mathfrak{U}})$ is cliquish.

MSC:

54C60 Set-valued maps in general topology
54E15 Uniform structures and generalizations
54E52 Baire category, Baire spaces
54B20 Hyperspaces in general topology

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quasi-uniform convergence