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## Vietoris-type Topologies on Hyperspaces

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*Abstract*: We introduce a new lower-Vietoris-type hypertopology in a way similar to that with which a new upper-Vietoris-type hypertopology was introduced in 1998 by Dimov and Vakarelov (it was called by them *Tychonoff-type hypertopology*). We study this new hypertopology and, in particular, we generalize many results of E. Cuchillo-Ibáñez-M.A. Morón-F.R. Ruiz del Portal. As a corollary of the obtained results, we get that for every continuous map $f : X \to X$, where $X$ is a continuum, there exist a subcontinuum $K$ of $X$ such that $f(K) = K$. We also introduce a new Vietoris-type hypertopology by means of the upper-Vietoris-type hypertopology and the lower-Vietoris-type hypertopology. Some of the results of E. Michael about hyperspaces with Vietoris topology are extended to analogous results for hyperspaces with Vietoris-type topology.