

On Corson and Valdivia compact spaces

*Salvador García-Ferreira, Reynaldo Rojas-Hernández**

sgarcia@matmor.unam.mx,
satzchen@yahoo.com.mx

The classes of Corson and Valdivia compact spaces have been object of intensive study in Topology and Functional Analysis. These classes of compact spaces have several nice properties and are interesting in many respects. A very interesting characterization of Valdivia compact spaces was obtained by Kubiś and Michalewski in 2006; a compact space is Valdivia if and only if admits a commutative r -skeleton. M. Cúth proved in 2014 that a compact space is Corson if and only if has a full r -skeleton. We present one proof for these two results, in the spirit of Bandlow's characterization of Corson compact spaces. Besides, we establish another characterization of Valdivia compact spaces by using a monotone structure of retractions and networks. It happens that, in general, this last structure has stronger properties than r -skeletons. We also obtain a characterization of $C_p(X)$ for a Corson compact space X through a monotone structure of \mathbb{R} -quotient maps. Using that result and some duality theorems, we provide a new internal characterization of Corson compact spaces through monotone families of closed and open sets. Some applications of these results are presented.

