Some hyperspaces of compact convex sets and their orbit spaces

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Let $cc(\mathbb{R}^n)$ denote the hyperspace of all nonempty compact convex subsets of the Euclidean space $\mathbb{R}^n$ endowed with the Hausdorff metric, and let $cc(\mathbb{B}^n) = \{A \in cc(\mathbb{R}^n) \mid A \subset \mathbb{B}^n\}$, where $\mathbb{B}^n$ is the closed unit ball of $\mathbb{R}^n$. In this talk we will describe the topological structure of several geometrically defined subspaces of $cc(\mathbb{R}^n)$ and $cc(\mathbb{B}^n)$ and their orbit spaces under the natural action of the orthogonal group $O(n)$. Among them are the hyperspaces $cb(\mathbb{B}^n) = \{A \in cc(\mathbb{B}^n) \mid Int\, A \neq \emptyset\}$ and $\check{c}b(\mathbb{B}^n) = \{A \in cb(\mathbb{B}^n) \mid \check{C}(A) = \mathbb{B}^n\}$, where $\check{C}(A)$ denotes the circumball of A. We will also introduce some new models for the Banach–Mazur compacta $BM(n)$ as a by-product. Related open problems will be discussed.

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