HAT SPINES AND SPLITTINGS

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Abstract. We are interested in contractible manifolds $M^n$ which decompose or split as $M^n \approx A \cup C \ B$ where $A, B, C \approx \mathbb{R}^n$ or $A, B, C \approx \mathbb{B}^n$. We introduce a countable collection of 4-manifolds, $\{M_i : i = 1, 2, \ldots\}$, each containing a spine which can be written as $A \cup C \ B$ with $A, B,$ and $C$ all collapsible. This implies each $M_i$ splits as $\mathbb{B}^4 \cup \mathbb{B}^4$. Using sequences from this collection we form infinite boundary connect sums whose interiors each split as $\mathbb{R}^4 \cup \mathbb{R}^4$. We thus obtain an uncountable collection of contractible open 4-manifolds which split in this way.