

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, $\{M_i : i = 1, 2, \dots\}$, 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 $\mathbb{B}^4 \cup_{\mathbb{B}^4} \mathbb{B}^4$. Using sequences from this collection we form infinite boundary connect sums whose interiors each split as $\mathbb{R}^4 \cup_{\mathbb{R}^4} \mathbb{R}^4$. We thus obtain an uncountable collection of contractible open 4-manifolds which split in this way.