**Title:** A characterization of Beckenbach families admitting discontinuous Jensen affine functions

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Let $F : \mathbb{R}^3 \to \mathbb{R}$ be a continuous function such that $\mathcal{F} := \{\mathbb{R} \ni x \mapsto F(x, a, b) \in \mathbb{R} : a, b \in \mathbb{R}\}$ is a Beckenbach family. Additionally, we assume that for each $a, b \in \mathbb{R}$ the functions $\mathbb{R} \ni x \mapsto F(x, a, b) \in \mathbb{R}$ are monotonic. We show that if there exists a function which is discontinuous at some point and Jensen affine with respect to the family $\mathcal{F}$, then there exists a strictly increasing and continuous function $h : \mathbb{R} \to \mathbb{R}$ and continuous $G, H : \mathbb{R}^2 \to \mathbb{R}$ such that

$$F(u, a, b) = h(G(a, b)u + H(a, b)), \qquad (*)$$

for all $u, a, b \in \mathbb{R}$. As a consequence we get an independent proof of theorem of J. Matkowski. Finally, we characterize Beckenbach families of the form $(*)$.

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