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Sergei L Bezrukov* (sb@mcs.uwsuper.edu), Department of Math and Computer Science,
University of Wisconsin - Superior, Belknap & Catlin, POB 2000, Superior, WI 54880. *On general constructions of Macaulay posets.* Preliminary report.

Let (P, \preceq) be a ranked poset and P_k be the set of its elements of rank k . For $A \subseteq P_k$ let $\Delta(A)$ denote the shadow of A defined as the set of all elements of P_{k-1} covered by A . The shadow minimization problem (SMP) is in finding, for a given m and k , a subset $A \subseteq P_k$ such that $|A| = m$ and $|\Delta(A)| \leq |\Delta(B)|$ for any $B \subseteq P_k$, $|B| = m$. The posets that admit nested solutions in SMP satisfying one additional condition on continuity, are called Macaulay posets.

We consider the SMP problem for posets representable as cartesian products of other posets. We present 4 general constructions, some of them are new, for Macaulay posets of considered type. We also present some new Macaulay posets, all whose cartesian powers are Macaulay. (Received September 26, 2005)