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Boris Rubin* (borisr@math.lsu.edu), Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803. *Quaternionic Busemann-Petty problem.*

The classical Busemann-Petty problem (1956) asks, whether origin-symmetric convex bodies in \mathbb{R}^n with smaller hyperplane central sections necessarily have smaller volumes. The answer is known to be affirmative if and only if $n \leq 4$. The same question for equilibrated convex bodies in \mathbb{C}^n has an affirmative answer if and only if $n \leq 3$. We give a complete solution to a similar problem in the n -dimensional quaternionic space \mathbb{H}^n regarded as a right (or left) \mathbb{H} -module. The method relies on the properties of cosine transforms on the unit sphere and provides alternative proofs also to the real and complex cases. Some other problems of integral geometry in spaces over algebras will be discussed. (Received September 15, 2008)