

## The Haagerup problem on subadditive weights on $W^*$ -algebras. II

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### Abstract

In 1975 U. Haagerup has posed the following question: Whether every normal subadditive weight on a  $W^*$ -algebra is  $\sigma$ -weakly lower semicontinuous? In 2011 the author has positively answered this question in the particular case of abelian  $W^*$ -algebras and has presented a general form of normal subadditive weights on these algebras. Here we positively answer this question in the case of finite-dimensional  $W^*$ -algebras. As a corollary, we give a positive answer for subadditive weights with some natural additional condition on atomic  $W^*$ -algebras. We also obtain the general form of such normal subadditive weights and norms for wide class of normed solid spaces on atomic  $W^*$ -algebras. © 2013 Allerton Press, Inc.

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### Keywords

atom, bounded linear operator, Hilbert space, normal functional, normed solid space, projection, subadditive weight,  $W^*$ -algebra