Entropy numbers of finite-dimensional Lorentz space embeddings

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The complexity of approximating functions from the unit ball of a function space can be quantified using entropy numbers of embeddings. Via Carl's inequality this sequence provides a lower bound on Gelfand or Kolmogorov numbers, which appear also in bounds for function samples. Motivated by the study of a discretized model, we study embeddings between finite-dimensional Lorentz spaces and describe the asymptotic behavior of the corresponding entropy numbers. Our study includes weak ℓ_p-spaces which often appear as sparsity models in Compressed Sensing. We also give a glimpse on the more general theory behind which involves sparse approximation and volume estimates in symmetric quasi-Banach spaces.