The Bishop-Phelps-Bollobás theorem for operators on $L_1(\mu)$

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We show that the Bishop-Phelps-Bollobás theorem holds for $\mathcal{L}(L_1(\mu), L_1(\nu))$ for all measures μ and ν and also holds for $\mathcal{L}(L_1(\mu), L_\infty(\nu))$ for every arbitrary measure μ and every localizable measure ν. Finally, we show that the Bishop-Phelps-Bollobás theorem holds for two classes of bounded linear operators from a real $L_1(\mu)$ into a real $C(K)$ if μ is a finite measure and K is a compact Hausdorff space. In particular, one of the classes includes all Bochner representable operators and all weakly compact operators.

Joint work with Sun Kwang Kim, Han Ju Lee, and Miguel Martín.