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Guy Moshkovitz*, guymoshkov@gmail.com, and **Asaf Shapira**. *A Tight Bound for Hypergraph Regularity*.

The hypergraph regularity lemma — the extension of Szemerédi’s graph regularity lemma to the setting of k -graphs — is one of the most celebrated combinatorial results obtained in the past decade. By now there are various (very different) proofs of this lemma, obtained by Gowers, Rödl et al. and Tao. Unfortunately, what all these proofs have in common is that they yield partitions whose order is given by the k -th Ackermann function. We prove that such Ackermann-type bounds are unavoidable for every $k \geq 2$, thus confirming a prediction of Tao. Prior to our work, the only result of this kind was Gowers’ famous lower bound for graph regularity. (Received September 17, 2018)