1113-05-28 **Kevin Ford*** (ford@math.uiuc.edu), Department of Mathematics, 1409 West Green Street, Urbana, IL 61802, **Ben Green** (ben.green@maths.ox.ac.uk), Mathematical Institute, Radcliffe Observatory Quarter, Woodstock Road, Oxford, OX2 6GG, United Kingdom, **Sergei Konyagin** (konyagin@mi.ras.ru), 8 Gubkin Street, Moscow, 119991, Russia, **James Maynard** (james.alexander.maynard@gmail.com), Mathematical Institute, Radcliffe Observatory Quarter, Woodstock Road, Oxford, OX2 6GG, United Kingdom, and **Terence Tao** (tao@math.ucla.edu), Department of Mathematics, 405 Hilgard Ave, Los Angeles, CA 90095. *Efficient hypergraph covering.*

Recently, the authors improved the bound on the largest gaps between consecutive prime numbers. An important ingredient in the proof is a new result on efficient covering of hypergraphs, which extends a well-known theorem of Pippenger and Spencer from 1989. The Pippenger-Spencer theorem ensures the existence of a near-perfect packing of a hypergraph $H = (V, E)$ under three basic assumptions on H: (a) uniformity - all hyperedges $e \in E$ have the same (bounded) cardinality k; (b) regularity - the degree of each vertex $v \in V$ is asymptotically the same; (c) small codegrees - for all distinct $v, w \in V$, there are "few" edges containing both v and w. Our new theorem gives essentially the same conclusion (not necessarily a packing, but an efficient near-covering) with a substantial weakening of hypotheses (a) and (b), while retaining (c) and the main hypothesis. (Received July 09, 2015)