1002-52-104 **Peter Brass*** (`peter@cs.ccny.cuny.edu`), Department of Computer Science, R8/206, The City College of New York, Convent Avenue at 137th Street, New York, NY 10031. *On Lebesgue's universal cover problem.* Preliminary report.

The universal cover problem in its most classical version asks for the minimum area of a convex set in the plane that contains congruent copies of any set of diameter 1. This problem is ascribed to Lebesgue, and was first studied in a paper by J. Pál in 1920. He gave a lower bound of 0.825 and constructed a universal cover of area 0.845. Since then a number of further covers have been constructed, slightly reducing the upper bound to 0.844, but the lower bound stood untouched for the next seventy years, until in 1994 G. Elekes increased it to 0.827. In this talk I present a further improvement of the lower bound to 0.83, using a combination of geometric and computational methods. (Received September 08, 2004)