1077-68-1790　　　　　**Anastasios Sidiropoulos*** (`sidiropo@gmail.com`), 6045 S. Kenwood Ave. Office 421, Chicago, IL 60637. *Optimal stochastic planarization.*

We show that any graph of genus $g > 0$ can be stochastically embedded into a distribution over planar graphs with distortion $O(\log g)$. Given a drawing of the graph into a genus-g surface, the embedding can be computed in polynomial time. Among other consequences, our result implies a black-box reduction for a large class of geometric optimization problems from instances on genus-g graphs, to corresponding ones on planar graphs, with a $O(\log g)$ loss factor in the approximation guarantee. (Received September 20, 2011)