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**Jacob D Baron\*** (jabar@math.rutgers.edu) and **Jeff Kahn** (jkahn@math.rutgers.edu). *The cycle space of a random graph.*

Write  $\mathcal{C}(G)$  for the cycle space of a graph  $G$ ,  $\mathcal{C}_\kappa(G)$  for the subspace of  $\mathcal{C}(G)$  spanned by the copies of  $C_\kappa$  in  $G$ ,  $\mathcal{T}_\kappa$  for the class of graphs satisfying  $\mathcal{C}_\kappa(G) = \mathcal{C}(G)$ , and  $\mathcal{Q}_\kappa$  for the class of graphs each of whose edges lies in a  $C_\kappa$ . We prove that for every odd  $\kappa \geq 3$  and  $G = G_{n,p}$ ,

$$\max_p \Pr(G \in \mathcal{Q}_\kappa \setminus \mathcal{T}_\kappa) \rightarrow 0;$$

so the  $C_\kappa$ 's of a random graph span its cycle space as soon as they cover its edges. For  $\kappa = 3$  this was shown by DeMarco, Hamm and Kahn (2013). (Received September 07, 2016)