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School of Education, Waseda University, Tokyo, 169-8050, Japan. *Unknotting numbers and  
crossing numbers of spatial embeddings of a planar graph.*

It is known that the unknotting number  $u(L)$  of a link  $L$  is less than or equal to half the crossing number  $c(L)$  of  $L$ . We show that there are a planar graph  $G$  and its spatial embedding  $f$  such that the unknotting number  $u(f)$  of  $f$  is greater than half the crossing number  $c(f)$  of  $f$ . We study relations between unknotting number and crossing number of spatial embedding of a planar graph in general. This is partly a joint work with Yuta Akimoto. (Received September 19, 2021)