

# Convex Sets in Empty Convex Position

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We investigate the following variant of the empty  $n$ -gon problem of Erdős. Let  $\mathcal{F}$  be a family of disjoint compact convex sets. A member  $A$  of  $\mathcal{F}$  is a *vertex* of  $\mathcal{F}$  if it is not contained in the convex hull of the union of the sets belonging to  $\mathcal{F} \setminus \{A\}$ . A sub-family  $\mathcal{F} \subset \mathcal{F}$  is in *convex position* if all of its members are vertices of  $\mathcal{F}$ .  $\mathcal{F}$  is in *empty convex position in  $\mathcal{F}$*  if it is in convex position and the convex hull of the union of its members does not contain any member of  $\mathcal{F} \setminus \mathcal{F}$ . We show that for any integers  $k \geq 4$  and  $n \geq k$  there is an integer  $N$  such that any family of more than  $N$  disjoint compact convex sets with the property that any  $k$  members of it are in convex position has  $n$  members that are in empty convex position in the family.