



# Maximal supports and Schur-positivity among connected skew shapes

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The Schur-positivity order on skew shapes is defined by  $B \leq A$  if the difference  $s_A - s_B$  is Schur-positive. It is an open problem to determine those connected skew shapes that are maximal with respect to this ordering. A strong necessary condition for the Schur-positivity of  $s_A - s_B$  is that the support of  $B$  is contained in that of  $A$ , where the support of  $B$  is defined to be the set of partitions  $\lambda$  for which  $s_\lambda$  appears in the Schur expansion of  $s_B$ . We show that to determine the maximal connected skew shapes in the Schur-positivity order and this support containment order, it suffices to consider a special class of ribbon shapes. We explicitly determine the support for these ribbon shapes, thereby determining the maximal connected skew shapes in the support containment order.

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