

ON A CONJECTURE ABOUT THE COMPARABILITY OF PARALLEL SYSTEMS WITH RESPECT TO THE CONVEX TRANSFORM ORDER*

BY

IDIR A R A B (COIMBRA), MILTO HADJIKYRIAKOU (LARNAKA), AND
PAULO EDUARDO OLIVEIRA (COIMBRA)

Abstract. We study the comparability of the lifetimes of heterogeneous parallel systems with independent exponentially distributed components. It is known that the order statistics of systems composed of two types of components may be comparable with respect to the star transform order. On what concerns the stronger convex transform order, results have been obtained only for the sample maxima assuming that one of the systems is homogeneous. We prove, under the same assumptions as for the star transform ordering, that the lifetimes of heterogeneous parallel systems are not comparable with respect to the convex transform order.

2020 Mathematics Subject Classification: Primary 60E15; Secondary 60E05, 62N05.

Key words and phrases: star transform order, convex transform order, failure rate, sign variation.

THE FULL TEXT IS AVAILABLE HERE

* This work was partially supported by the Centre for Mathematics of the University of Coimbra - UIDB/00324/2020, funded by the Portuguese Government through FCT/MCTES.