

---

**NARAD RAMPERSAD**, University of Winnipeg

*Extremal words in the shift orbit closure of a morphic sequence*

Let  $x$  be an infinite word over an alphabet  $A$ ; let  $\sigma$  be a total order on  $A$ ; and let  $b$  be a letter of  $A$ . A word  $y$  in the shift orbit closure of  $x$  is "extremal" if it is the lexicographically least word (with respect to  $\sigma$ ) starting with  $b$  in the shift orbit closure of  $x$ . We show that if  $x$  is morphic (i.e.,  $x = g(f^\omega(a))$  for some morphisms  $f, g$ ) and  $f$  and  $g$  satisfy certain conditions, then every extremal word of  $x$  is morphic. In particular, the extremal words of pure morphic binary words are morphic.