

## On semigroups of orientation-preserving partial permutations with restricted range

By DE BIAO LI (Taiyuan) and VÍTOR H. FERNANDES (Caparica)

**Abstract.** Let  $\Omega_n$  be a finite chain with  $n$  elements ( $n \in \mathbb{N}$ ), and let  $\mathcal{POPI}_n$  be the semigroup of all injective orientation-preserving partial transformations of  $\Omega_n$ . In this paper, for any nonempty subset  $Y$  of  $\Omega_n$ , we consider the subsemigroup  $\mathcal{POPI}_n(Y)$  of  $\mathcal{POPI}_n$  of all transformations with range contained in  $Y$ . We study the regularity and describe Green's relations and extended Green's relations of  $\mathcal{POPI}_n(Y)$ . Moreover, we calculate the rank of  $\mathcal{POPI}_n(Y)$  and determine when two semigroups of this type are isomorphic.

DE BIAO LI  
SCHOOL OF MATHEMATICS  
NORTH UNIVERSITY OF CHINA  
TAIYUAN, SHANXI 030000  
P. R. CHINA

VÍTOR H. FERNANDES  
CENTER FOR MATHEMATICS AND  
APPLICATIONS (NOVA MATH)  
AND DEPARTMENT OF MATHEMATICS  
FACULDADE DE CIÉNCIAS E TECNOLOGIA  
UNIVERSIDADE NOVA DE LISBOA  
MONTE DA CAPARICA  
2829-516 CAPARICA  
PORTUGAL

---

*Mathematics Subject Classification:* 20M20.

*Key words and phrases:* orientation-preserving, restricted range, isomorphism theorem, rank, transformations.