

## Varieties of $P$ -restriction semigroups.

Peter R. Jones  
Marquette University, Milwaukee, Wisconsin

A  $P$ -restriction semigroup is a biunary semigroup  $(S, \cdot, +, *)$  that satisfies the ‘ $P$ -Ehresmann’ identities  $xx^* = x$ ,  $(xy)^* = (x^*y)^*$ ,  $(x^*y^*)^* = y^*x^*y^*$ ,  $x^*x^* = x^*$ , and their  $+/*$  - duals, together with the linking identity  $(x^*)^+ = x^*$  and the ‘generalized ample’ identity  $x(yx)^* = x^+y^*x$  and their duals. Any variety of regular  $*$ -semigroups induces a variety of  $P$ -restriction semigroups via the induced operations  $a^+ = aa^{-1}$ ,  $a^* = a^{-1}a$ . In particular, the inverse semigroups induce restriction semigroups (a.k.a. weakly  $E$ -ample semigroups) in this fashion. I will consider this relationship in general and, in particular, for ‘orthodox’  $P$ -restriction semigroups, through the study of the appropriate free objects.