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## Semi-binary operations on $\beta$ -languages

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**Abstract.**  $\beta$ -languages of order  $n$  have been introduced by the authors of [9]. The authors of [5] made a study of various closure properties of  $\beta$ -languages. In this paper, we first show that the family of  $\beta$ -languages of order  $n$  is not closed under intersection, difference and complementation. We then further introduce the notion of semi-binary operation on a non-empty set  $G$  with respect to its non-empty subset  $H$  using the binary operation on  $H$ . Finally, we show that the operations of intersection and difference are semi-binary operations on the class  $L$  of  $\beta$ -languages of order  $n$  with respect to class  $R$  of regular languages which is a non-empty subset of  $L$  and is closed under these operations.

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