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REMARKS ON ANTI-COMMUTATIVE SEMIRINGS

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Abstract: In their paper [3], Ratti et al proved that a semi ring is anti-commutative if and only if it is a product of two semi rings S_1 and S_2 such that S_1 is a left multiplication and S_2 is a right multiplication. The object of the present paper is to extend the above results for a product of n semi rings S_1, S_2,S_3,..., S_n. We improve and make extensive use of Ratti and Lin's method throughout. Finally, we provide a counterexample which shows that the hypothesis of our theorems are not all together superfluous.

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1. Introduction

By a semi ring we shall mean a non-empty set S endowed with two associative binary operations called addition and multiplication (denoted by (+) and (.), respectively) satisfying the following conditions:

(i) (S,+) is a commutative semi group.
(ii) (S, .) is a semi group.
(iii) multiplication distributes over addition both from the left and the right.

A semi ring S is commutative if multiplication in S is commutative.

A semi ring S is anti-commutative if and only if the relation $x \neq y$ always implies $xy \neq yx$, for arbitrary $x, y \in S$.

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