ON DOUBLE-FRAMED SOFT SETS OF NON-ASSOCIATIVE ORDERED SEMIGROUPS

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Abstract: In this note, the authors introduce the notion of double-framed soft sets (briefly, DFS-sets) in an ordered $\mathcal{AG}$-groupoid. An ordered $\mathcal{AG}$-groupoid can be referred to as a non-associative ordered semigroup, as the main difference between an ordered semigroup and an ordered $\mathcal{AG}$-groupoid is the switching of an associative law. We define and give the examples of DFS l-ideals, DFS r-ideals and DFS bi-ideals in an ordered $\mathcal{AG}$-groupoid and also investigate the relationship between them. We give an alternate definition for a strongly regular element of a unitary ordered $\mathcal{AG}$-groupoid and show that how a strongly regular ordered $\mathcal{AG}$-groupoid becomes an ordered $\mathcal{AG}^{**}$-groupoid and a completely inverse ordered $\mathcal{AG}$-groupoid. As an application of our results we get characterizations of a strongly regular ordered $\mathcal{AG}$-groupoid in terms of DFS one-sided (two-sided) ideals and DFS bi-ideals. These concepts will help in verifying the existing characterizations and will