



Rings & Wings

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Title: Quantales Arising From Rings

Abstract: It is well-known that the ideals of a ring form a quantale, i.e., a lattice with an extra multiplication operation. Other types of subobjects of a ring, such as subgroups and submonoids, likewise form quantales, but have received much less attention. I will discuss the additive submonoid quantale of an arbitrary ring, with particular focus on the question of which properties of the ring can be recovered from it. This quantale, unlike the ideal quantale, captures significant information about the cardinality, characteristic, and center of the ring. Certain rings, such as non-prime finite fields, torsion-free rings, and those with characteristic 2, are completely determined by their submonoid quantales.