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Lawson-Pierce Duality

Classic work of Pierce (1967) and Dauns-Hofmann (1966) shows that biregular rings are dual to bundles of simple rings over Stone spaces. More precisely, the sections of such a bundle form a biregular ring while, conversely, any biregular ring can be represented on such a bundle constructed from its Stone space of maximal ideals. Here we outline how to extend this to a duality of Steinberg rings, a purely algebraic generalisation of Steinberg algebras, with ringoid bundles over ample groupoids. This generalises work of Armstrong et al. (2021) on the reconstruction of twisted Steinberg algebras, while also upgrading it to a true categorical duality. Our work is largely based on an even more general duality of Steinberg semigroups with ample category bundles which also encompasses Lawson's (2010) noncommutative Stone duality between Boolean inverse semigroups and ample groupoids.