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On the lattice of z-ideals of a commutative ring

Let A be a commutative ring with identity. An ideal I of A is called a z-ideal if whenever two elements of A belong to the same maximal ideals and one of the elements is in I, then so is the other. We prove that the lattice of z-ideals of a commutative ring with identity is a coherent frame. A ring with zero Jacobson radical is shown to be feebly Baer precisely when its frame of z-ideals is feebly projectable. Denote by $\mathrm{ZId}(A)$ the frame of z-ideals of a ring A. We show that the assignment $A \mapsto \mathrm{ZId}(A)$ is the object part of a functor $\mathbf{CRng}_{\mathfrak{z}} \to \mathbf{CohFrm}$, where $\mathbf{CRng}_{\mathfrak{z}}$ designates the category whose objects are commutative rings with identity and whose morphisms are the ring homomorphisms that contract z-ideals to z-ideals.

Joint work with Warren McGovern.