THE LATTICE OF QUASIVARIETIES OF COMMUTATIVE IDEMPOTENT AND ENTROPIC GROUPOIDS.

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A commutative idempotent and entropic groupoid $(A, \cdot)$ is a groupoid with a commutative (1) idempotent (2) and entropic (3) binary operation:

$$x \cdot y = y \cdot x, \tag{1}$$

$$x \cdot x = x, \tag{2}$$

$$(x \cdot y) \cdot (z \cdot t) = (x \cdot z) \cdot (y \cdot t). \tag{3}$$

The variety of those groupoids we denote by $\mathcal{CBM}$. The class $\mathcal{CBM}_{cl}$ of *cancellative* commutative binary modes is the subquasivariety of the variety $\mathcal{CBM}$ defined by the quasi-identity:

$$x \cdot y = x \cdot z \to y = z.$$

Irregular quasivarieties of commutative idempotent entropic groupoids are quasivarieties that do not contain semilattices. The class $\mathcal{CBM}_{ir}$ of *irregular* commutative binary modes is a subquasivariety of the variety $\mathcal{CBM}$ defined by the quasi-identity:

$$x \cdot y = x \to x = y.$$

A.B.Romanowska and K.Matczak described: the lattice of quasivarieties of cancellative commutative binary modes, the lattice of certain irregular quasivarieties of commutative binary modes, and the lattice of subquasivarieties of any proper regular subvariety of commutative binary modes (a regular variety being a variety containing the variety of semilattices).

I present the full description of the lattice of subquasivarieties of the variety of commutative entropic and idempotent groupoids, which I will shown to be non-modular.