▸ LIBOR BĚHOUNEK, PETR CINTULA, AND TOMÁŠ LÁVIČKA, *Non-monotonic abstract multiset consequence relations.*

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By working with *sets* of premises, Tarski consequence relations automatically assume certain structural rules. Consequently, most substructural logics can only be represented Tarski-style as *external* consequence relations that preserve designated values. Closer to the spirit of substructural logics, though, are *internal* consequence relations, representing the validity of substructural implication and using *multisets,* rather than sets, of premises to avoid contraction. This was the route taken by Avron [1] and recently elaborated by Cintula et al. [2]. The latter authors generalize Avron's approach from multisets to abstract relations on dually integral Abelian pomonoids, with a Blok–Jónsson monoidal action representing substitution-invariance. Unlike Avron, though, they assume the monotonicity of entailment, thereby ruling out internal consequence relations of weakening-free substructural logics.

In this contribution we explore several non-monotonic generalizations of the abstract consequence relations of [2], with weaker variants of monotonicity motivated by the resource-sensitive interpretation of weakening-free substructural logics. We illustrate general definitions and results on the primary examples of multiset-to-multiset internal consequence relations for particular substructural logics, but also, e.g., on entailment between real-valued sets of formulae related to Pavelka-style logics.

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[1] Arnon Avron, *Axiomatic systems, deduction and implication*, ***Journal of Logic and Computation***, vol. 2 (1992), no. 1, pp. 51–98.

[2] Petr Cintula, José Gil-Feréz, Tommaso Moraschini, Francesco Paoli, *An abstract approach to consequence relations*, ***The Review of Symbolic Logic***, vol. 12 (2019), no. 2, pp. 331–371.