Strongly Noetherian Rings

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We introduce a new notion of constructive noetherianity, which is quite natural and easy to use, and is very concrete and elementary in the special case of polynomials rings over a field. It is nevertheless strong enough to prove constructively the termination of algorithms involving "trees of ideals".

The efficiency of such algorithms (at least for providing clear and intuitive constructive proofs) is illustrated through a constructive theory of Lasker-Noether rings: on can give constructive proofs for the existence of the minimal primes over an ideal, of its radical, of its primary decomposition, in a wide class of polynomial rings.