

Model completions of co-Heyting algebras

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Height and co-heights of the prime filters of a co-Heyting algebra L give rise to co-dimension and dimension of the elements of L , just as it happens in algebraic geometry when (co)dimension of varieties are defined in terms of length of chains of prime ideals in rings of polynomial functions.

On one hand we prove that the pro-finite-dimensional completion of any co-Heyting algebra is its Hausdorff completion for a certain pseudometric. This completion has remarkable analytic properties such as the convergence of every monotonic sequence on a compact subset.

On the other hand, the geometric intuition given by the (co)dimension leads us to natural axiomatizations of the model-completions of locally finite varieties of co-Heyting algebras. It also sheds new light on some related model-completions results.