Avoidable polynomials and $\mathbb{R} \subseteq L$

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In [3, 4] Törnquist and Weiss proved many natural $\Sigma^1_2$ definable counterparts of classical equivalences to the Continuum Hypothesis (CH). These become equivalent to “all reals are constructible”. Following this scheme, we proved definable counterparts for some algebraic equivalent form of CH.

More specifically we obtained a $\Sigma^1_2$ version of a result about avoidable polynomials proven by Schmerl [2]. As a corollary, we have $\mathbb{R} \subseteq L$ if and only if there exists a $\Sigma^1_2$ coloring of the plane in countably many colors with no monochromatic right-angled triangle, which is the $\Sigma^1_2$ analogous of a famous result by Erdős and Komjáth [1].

References


[4] Asger Törnquist and William Weiss. The $\Sigma^1_2$ counterparts to statements that are equivalent to the continuum hypothesis. 2012.