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Schwichtenberg, Helmut

Dialectica interpretation of well-founded induction. (English)

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By a classical theorem of Euclid, the greatest common divisor (gcd) of any two natural numbers is a linear (integer) combination of them. The author applies Gödel's Dialectica interpretation to this theorem and extracts a term which yields an algorithm for finding such a combination for any given two natural numbers. Although the author emphasizes on the use of well-founded induction for the minimum principle used in the proof, the arguments are rather trivial and an algorithm for finding a linear combination for the gcd of two numbers is more than clear. A more involved example of the application of the Dialectica interpretation would have been more desirable.

Saeed Salehí (Tabriz)

Keywords : Dialectica interpretation; Euclid's theorem; program extraction

Classification :

- *03F10 Functionals in proof theory
- 03F25 Relative consistency and interpretations
- 03F35 Higher-order arithmetic and fragments