

- LIAO YUKE, *Recursive coloring without Δ_3^0 witness for Hindman theorem*.
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We give an example of a recursive coloring of integers which has no Δ_3^0 witness for Hindman theorem and an example of a recursive coloring of integers such that any Π_3^0 set of integers whose any two elements are apartness is not a witness for Hindman theorem.

[1] ANDREAS R. BLASS, JEFFRY L. HIRST, STEPHEN G. SIMPSON, *LOGICAL ANALYSIS OF SOME THEOREMS OF COMBINATORICS AND TOPOLOGICAL DYNAMICS*, *Contemporary Mathematics*, vol. 65 (1987), pp. 125–156.