Order **10**: 393, 1993.

Corrigendum

Jaroslav Nešetřil and Vojtech Rödl: 'Complexity of diagrams', *Order* **3** (1987), 321–330.

In [1] we claimed the following:

THEOREM 1. *The following decision problem is NP-hard.*
Instance: *(undirected) graph G.*
Question: *Is G a (Hasse) diagram of a poset?*

The reduction given in [1] from chromatic number has a gap and in fact only the following implications were proved:

$\chi(G) < 4$ implies G^* is a diagram;
$\chi(G) > 6$ implies G^* fails to be a diagram.

We thank B. Toft and his student J. Thostrup who turned our attention to a gap in our argument. In [2] we described the argument which follows the same basic scheme of the proof as in [1], but it involves a recent result of Lund and Yannakakis [3] on NP-hardness of approximation of chromatic number. More specifically, for a given k, we give a polynomial construction which assigns to a graph G a diagram G_k^* with the following properties:

if $\chi(G) \leqslant 4$ then G_k^* is a diagram,
if $\chi(G) \geqslant 4k + 1$ then G_k^* fails to be a diagram.

In January 1993, we submitted an erratum describing the construction and stating four lemmas on which our reduction is based. A full journal version was submitted in June. A different argument establishing Theorem 1 was independently discovered by G. Brightwell. His proof is simpler and more direct than ours.

References

1. J. Nešetřil and V. Rödl (1987) Complexity of diagrams, *Order* **3**, 321–330.
2. J. Nešetřil and V. Rödl, *More on complexity of diagrams*, manuscript.
3. C. Lund and M. Yannakakis (1993) On the hardness of Approximating Minimization Problems, *25 ACM STOC*, 286–293.

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