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Correction to "A note on the large inductive dimension of totally normal spaces"

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The proof of the following corollary given in [1] is not correct, which was kindly noticed by Professor A. R. Pears. Please give a chance to correct it.

COROLLARY 2. *Let* $X(\neq\emptyset)$ *and* $Y(\neq\emptyset)$ *be spaces such that* $X\times Y$ *is totally normal and* σ*-totally paracompact. Then*

$$\operatorname{Ind}(X\times Y)\leqq \operatorname{Ind}X+\operatorname{Ind}Y .$$

PROOF (by induction on $\operatorname{Ind}X+\operatorname{Ind}Y$). When $\operatorname{Ind}X+\operatorname{Ind}Y=0$, $\operatorname{Ind}X=\operatorname{Ind}Y=0$. Hence $X\times Y$ has a base consisting of open and closed sets. Thus $\operatorname{ind}(X\times Y)=0$ and hence $\operatorname{Ind}(X\times Y)=0$ by [1, Theorem 4]. Put the induction hypothesis that the inequality is true for the case when $\operatorname{Ind}X+\operatorname{Ind}Y<n$ and consider the case: $\operatorname{Ind}X+\operatorname{Ind}Y=n$, $n>0$. Since each point of $X\times Y$ has an arbitrarily small neighborhood $U\times V$ with U and V open such that $\operatorname{Ind}B(U)<\operatorname{Ind}X$ and $\operatorname{Ind}B(V)<\operatorname{Ind}Y$, and $\operatorname{Ind}B(U\times V)\leqq\max(\operatorname{Ind}(B(U)\times\bar{V}), \operatorname{Ind}(\bar{U}\times B(V))\leqq n-1$ by [1, (e)], then $\operatorname{ind}(X\times Y)\leqq n$. Hence $\operatorname{Ind}(X\times Y)\leqq n$ by [1, Theorem 4] and the induction is completed. The proof is finished.

A similar error is in the proof of [2, Theorem 25-2] which can be corrected by the same argument as in the above.

References

[1] K. Nagami, A note on the large inductive dimension of totally normal spaces, J. Math. Soc. Japan, 21 (1969), 282-290.
[2] K. Nagami, Dimension theory, Academic Press, New York, 1970.

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