

Jaromír Duda

Announcements of new results

Commentationes Mathematicae Universitatis Carolinae, Vol. 36 (1995), No. 1, 207--207

Persistent URL: <http://dml.cz/dmlcz/118746>

Terms of use:

© Charles University in Prague, Faculty of Mathematics and Physics, 1995

Institute of Mathematics of the Academy of Sciences of the Czech Republic provides access to digitized documents strictly for personal use. Each copy of any part of this document must contain these *Terms of use*.



This paper has been digitized, optimized for electronic delivery and stamped with digital signature within the project *DML-CZ: The Czech Digital Mathematics Library*
<http://project.dml.cz>

ANNOUNCEMENTS OF NEW RESULTS

(of authors having an address in Czech Republic)

A STRONG CONDITION FOR COMPATIBLE RELATIONS

Jaromír Duda (616 00 Brno, Kroftova 21, Czech Republic; received January 31, 1995)

It is already known that varieties having factorable congruences (i.e. the Fraser-Horn property), factorable tolerances and factorable reflexive compatible relations are nontrivial Mal'cev classes. However any variety with factorable subalgebras is trivial. Now we state

Theorem 1. *For a variety V , the following conditions are equivalent:*

- (1) *factorable subalgebras in $A \times B$, $A, B \in V$, form an up-hereditary system;*
- (2) *the universal relation $A \times A$ on any $A, B \in V$ is a compact element in the tolerance lattice $\text{Tol } A$;*
- (3) *there are unary terms $u_1, \dots, u_n, v_1, \dots, v_n$ and a $(2+n)$ -ary term p such that*

$$\begin{aligned}x &= p(x, y, u_1(z), \dots, u_n(z)) \\y &= p(x, y, v_1(z), \dots, v_n(z))\end{aligned}$$

are identities in V .

Corollary 1. *Any variety V from Theorem 1 has factorable reflexive compatible relations, in particular, V has the Fraser-Horn property.*

Corollary 2. *Let V be a variety from Theorem 1, $u_1, \dots, u_n, v_1, \dots, v_n$ unary terms from part (3) of this theorem. Then a homomorphism $h : A \times B \rightarrow C \times D$, $A, B, C, D \in V$, is factorable iff $h(u_i(a), v_i(b)) = \langle u_i(c), v_i(d) \rangle$, $1 \leq i \leq n$, hold for some $\langle a, b \rangle \in A \times B$ and $\langle c, d \rangle = h(a, b)$.*