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ANNOUNCEMENTS OF NEW RESULTS

VARIETIES OF SUBREGULAR ALGEBRAS ARE DEFINABLE BY A MAL'CEV

CONDITION

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In [1], J. Timm introduced the concept of subregular algebra as follows: An algebra \mathcal{A} is called subregular if any congruence θ on \mathcal{A} is uniquely determined by its classes $[b]_\theta$, $b \in \mathcal{B}$, for every subalgebra \mathcal{B} of \mathcal{A} .

Theorem. For any variety V , the following conditions are equivalent:

- (1) Every algebra $\mathcal{A} \in V$ is subregular;
- (2) There exist unary polynomials u_1, \dots, u_n , ternary polynomials p_1, \dots, p_n and 4-ary polynomials s_1, \dots, s_n such that

$$x = s_1(x, y, z, u_1(z))$$

$$s_i(x, y, z, p_i(x, y, z)) = s_{i+1}(x, y, z, u_{i+1}(z)) \text{ for } 1 \leq i < n$$

$$y = s_n(x, y, z, p_n(x, y, z))$$

$$u_i(z) = p_i(x, x, z) \text{ for } 1 \leq i \leq n;$$

- (3) There exist unary polynomials u_1, \dots, u_n and ternary polynomials p_1, \dots, p_n such that

$$(u_i(z) = p_i(x, y, z), 1 \leq i \leq n) \iff x = y.$$

R e f e r e n c e s

- [1] J. TIMM: On regular algebras, in Contributions to universal algebra, Proceedings of the Colloquium held in Szeged, 1975. Coll. Math. Soc. J. Bolyai, Vol. 17. Norht-Holland, Amsterdam 1977, pp. 503-514.

EXISTENCE AND MULTIPLICITY RESULTS FOR NONLINEAR NONCOERCIVE

EQUATIONS

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We assume that $L: D(L) \subset L^2(\Omega) \rightarrow L^2(\Omega)$ is linear self-adjoint operator with dense domain $D(L)$ and closed range $R(L)$. Let 0 be an eigenvalue of L and let for the corresponding eigenspace $\dim N(L) < +\infty$; $L^2(\Omega) = N(L) \oplus R(L)$. We assume that the functions in $N(L)$ satisfy the "unique continuation property" (i.e. the only function $w \in N(L)$ which is vanishing on