Existence of weakly symmetric operations, I and II: verifying an algebraic consequence of the CSP dichotomy conjecture

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Abstract. This talk is in two parts, presented by McKenzie, and Maroti. The main result is that every finite algebra possessing a Taylor term has a WNU-term *(weak near-unanimity term)*. This is a special Taylor term $t(x_1, \ldots, x_n)$ $(n \geq 3)$, characterized as satisfying the equations $t(x, \ldots, x) = x$ and the n equations $t(x, x, \ldots, x, y, x, \ldots, x) = x$ in which all variable positions except one are occupied by x. The proof exhibits, the authors believe, many interesting ideas, so they have combined their two talks into one double-length talk in which the proof will be sketched. McKenzie has conjectured that every finite algebra with a Taylor term has a term $t(x_1, \ldots, x_n)$ $(n \geq 3)$ satisfying $t(x, \ldots, x) = x$ and $t(x_1, \ldots, x_n) = t(x_2, x_3, \ldots, x_n, x_1)$ *(cylic idempotent term)*. This is another form of special Taylor term, whose existence for an algebra $\mathbf{A}$ possibly could be of some use in proving that $CSP(\mathbf{A})$ is tractable. Libor Barto, Marcin Kozik and Todd Niven have recently proved an important special case of this conjecture: every finite algebra with Jónsson terms (for congruence distributivity) possesses a cyclic term.