## On some number-theoretic conjectures of $\mathbf{V}$. Arnold

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#### Abstract

In [1], V.I. Arnold conjectured "the matrix Euler congruence": $\operatorname{tr} A^{p^{n}} \equiv \operatorname{tr} A^{p^{n-1}}(\bmod$ $p^{n}$ ) for any integer matrix $A$, prime $p$, and natural number $n$. He proved it for $p \leq 5, n \leq 4$. In fact the conjecture immediately follows from a result of C.J. Smyth [5]. We give a simple proof of this result and discuss a related conjecture of Arnold concerning some congruences for multinomial coefficients.


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