

SATISFIABILITY THRESHOLDS FOR REGULAR OCCUPATION PROBLEMS

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We study threshold phenomena in random regular constraint satisfaction problems (CSPs). Based on a *ceteris paribus* approach in terms of the density evolution equations known from statistical physics, we focus on a specific prominent class of problems of this type, the so-called *occupation problems*. For given $k, d > 1$ and $r \in [k - 1]$ a d -regular r -in- k occupation problem $\mathfrak{o} = (v_\alpha)_{\alpha \in [m]}$ on n variables and m constraints is given by the variables $v_\alpha \in [n]^k$ involved.