

I will present nonexistence results for elliptic equations in unbounded domains, an example being $-\Delta u = f(u)$ where f is a positive function. The game is to find hypotheses on f to ensure there are no positive supersolutions. We introduce a new method, in joint work with B. Sirakov, for finding sharp conditions on f for nonexistence. Our approach gives new simplified proofs of many results in the literature, applies to many different situations and therefore unifies much of the theory, and yields new results (even for Laplacian in two dimensions). The method is based entirely on the maximum principle instead of the more typical reliance on energy methods and Pohozaev identities.