

Kolmogorov Complexity – Assignment 6

Look at the Barak-Impagliazzo-Wigderson paper (linked to on the course page) and use their main result to show:

For any constant $\delta > 0$, there exists a k and a polynomial-time computable f such that if we have x_1, \dots, x_k, y such that

1. $|x_i| = n$ for all i
2. $K(x_i) \geq \delta n$ for all i ,
3. $K(x_1 x_2 \dots x_k) \geq K(x_1) + K(x_2) + \dots + K(x_k) - O(\log n)$, and
4. $y = f(x_1, x_2, \dots, x_k)$

then $|y| = n$ and $K(y) \geq n - O(\log n)$.