The degrees of divisors of $x^n - 1$

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Abstract: We discuss what is known about the following questions concerning the degrees of divisors of $x^n - 1$ in $\mathbb{Z}[x]$, as $n$ ranges over the natural numbers:

1. How often does $x^n - 1$ have AT LEAST ONE divisor of every degree between 1 and $n$?
2. How often does $x^n - 1$ have AT MOST ONE divisor of every degree between 1 and $n$?
3. How often does $x^n - 1$ have EXACTLY ONE divisor of every degree between 1 and $n$?
4. For a given $m$, how often does $x^n - 1$ have a divisor of degree $m$?

We will also discuss what changes when $\mathbb{Z}$ is replaced by the finite field $\mathbb{F}_p$. A portion of this talk is based on joint work with Paul Pollack.

Wednesday, February 6, 2013, 3:00 pm
Mathematics and Science Center: W306

Mathematics and Computer Science
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