Intercity Number Theory Seminar, September 6, Leiden.
Celebration of Rob Tijdeman's 70th birthday

Abstracts

Divisor sums and higher powers. *Frits Beukers*

The sum of the divisors of an integer n (including n itself) is denoted by $\sigma(n)$. Fermat noticed that $\sigma(7^3) = 20^2$ and asked for more examples of $\sigma(n^3) = m^2$. He also asked for examples of $\sigma(n^2) = m^3$. In this lecture I discuss questions of this type, which formed the subject of a recent joint article with Florian Luca and Frans Oort.

On a question of Wintner. *Cameron Stewart*

Let T be a set of prime numbers and let $(n_1, n_2, \ldots)$ be the increasing sequence of positive integers all of whose prime factors are from T. Wintner asked if it is possible to find an infinite set of primes T with the property that the difference between consecutive terms in the associated sequence tends to infinity as the terms tend to infinity.In 1973 Tijdeman proved that such sets T exist. We shall discuss some recent joint work with Jeongsoo Kim concerning these sets.

Random continued fraction expansions. *Cor Kraaikamp*

If one considers expansions to a non-integer base $\beta > 1$, it is fairly simple to randomize such expansions. Due to this, one can show that almost every irrational number x has infinitely many expansions to the same base $\beta > 1$. This has been used by Daubechies and her co-authors in applications in the so-called AD-conversions.

It is not immediately clear how other expansions, for example continued fraction expansion algorithms, can be randomized. However, it follows from recent work by Maxwell Anselm and Steven Weintraub that this indeed can be done.

A cube whose sum of divisors is again a cube. *Herman te Riele*

In [1], positive integers are studied whose sum of divisors is a perfect power. Answering a question of a PhD student of Rob Tijdeman, we show how we found a cube, large than 1, whose sum of divisors is again a cube.

[1] Frits Beukers, Florian Luca, and Frans Oort, Power values of divisor sums, The Amer. Math. Monthly, vol. 119, No. 5 (May 2012), pp. 373-380.