Logik Kolloquium, July 15

Title: Cardinal arithmetic and infinite combinatorics.

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Abstract: The equation

$$\lambda^n = \lambda \tag{1}$$

holds for every finite cardinal $n > 0$ for all $\lambda \geq \aleph_0$, and is quite useful in many applications.

Although some partial extension of (1) to infinite exponents are known, like Cantor's

$$\aleph^{\aleph_0} = \aleph \tag{2}$$

it is never the case that for $\kappa \geq \aleph_0$ all cardinals $\lambda$ in some end-segment of the cardinals satisfy $\lambda^\kappa = \lambda$.

In the talk we shall briefly review the history of the equations in question and present some cardinal-arithmetic functions weaker than exponentiation which on the one hand satisfy equations similar to (1) and on the other hand are sufficiently strong to apply effectively in infinite combinatorics.