

The many faces of the Kempner number

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In this talk I will focus on the simple series

$$\kappa := \sum_{n=0}^{\infty} \frac{1}{2^{2^n}}$$

that can be easily proved to be transcendental. The first proof is due to Kempner in 1916 and, in honor of this result, we refer to κ as the Kempner number. If the transcendence of κ is not a real issue, our aim is instead to look at the many faces of κ , which will lead us to discuss five different proofs of this fact. This must be (at least for the speaker) some kind of record, even if we do not claim this list of proofs to be exhaustive. Beyond the transcendence of κ , the different proofs we will present all offer the opportunity to mention some interesting ideas and methods that are used for proving deeper results.