

The Frame-Stewart Conjecture*

Andreas M. Hinz

University of Maribor (Slovenia) & LMU Munich (Germany)

andreas.hinz@um.si & hinz@math.lmu.de

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Abstract. 75 years ago, Advanced Problem 3918 of the *American Mathematical Monthly*, posed by B. M. Stewart, asked for what we now call the distance of vertices 0^n and $(p-1)^n$ in *Hanoi graph* H_p^n , $n, p \in \mathbb{N}$, $p \geq 4$, thus bringing what more than 30 years earlier H. E. Dudeney had called *The Reve's Puzzle* ($p = 4$) to the attention of mathematicians. In 1941, O. Dunkel pointed out that the two solutions and corresponding algorithms submitted by the proposer and by J. S. Frame, depend on an unproved hypothesis, the truth of which having become known as the *Frame-Stewart Conjecture*. During the past three decades, Hanoi graphs and the closely related *Sierpiński graphs* S_p^n have been studied intensely for their topological and metric properties. But whereas the latter are comprehensively captured for all S_p^n , the quest for the values of $\text{diam}(H_p^n)$ or $\varepsilon(0^n)$ in H_p^n is open and the Frame-Stewart Conjecture still undecided.