

Exposé court

48 **Arithmetic nature of q -Euler-Stieltjes constants**

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Kurokawa and Wakayama (2003) introduced a q -analogue of the Euler constant and studied the irrationality of certain numbers that involve q -Euler constant. In this talk, we discuss the extension of their results and the linear independence result for certain numbers involving q -analogue of the Euler constant. Moreover, we obtain the closed-form expression for a q -analogue of the k -th Stieltjes constant, $\gamma_k(q)$. Further, using Nesterenko's result, we discuss a question which Erdős mentioned in 1948 concerning the arithmetic nature of the infinite series $\sum_{n \geq 1} \frac{\sigma_1(n)}{t^n}$, where t is any integer greater than 1. Finally using an answer to Erdős's question, we discuss the arithmetic nature of some infinite series involving $\gamma_1(2)$.

Bibliography

- [1] T. Chatterjee and S. Garg. On q -analogue of Euler-Stieltjes constants. *Proc. Amer. Math. Soc.*, 151:2011–2022, 2023.