

**MODERATE DEVIATION PRINCIPLES AND
MOD-GAUSSIAN CONVERGENCE FOR SOME
LACUNARY TRIGONOMETRIC SUMS**

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Lacunary trigonometric sums share some properties with sums of i.i.d. random variables: they satisfy the central limit theorem [Salem and Zygmund], and the law of the iterated logarithm [Erdős and Gal]. However, the large deviation behaviour of such sums depends on arithmetic properties of the lacunary sequence involved, as was proven recently by Aistleitner, Gantert, Kabluchko, and Prochno. We will show that the moderate deviation behaviour of lacunary sums remains the same as in the i.i.d. case, provided that the ratios of the consecutive elements of the lacunary sequence are integers. We will also give some conditions on the lacunary sequence, under which a Mod-Gaussian convergence holds. Work in progress with Joscha Prochno.