

# Mean Square $L_2$ -Discrepancy of Randomized Digital Nets in Prime Base

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The talk is based on results of joint work with Friedrich Pillichshammer and Josef Dick. We study the mean square weighted  $L_2$ -discrepancy of random digital  $(t, m, s)$ -nets in prime base  $p$ . We consider as randomization method a digital shift of depth  $m$ . After giving a formula for the mean square weighted  $L_2$ -discrepancy we prove an upper bound on this discrepancy. Subsequently we deduce that there exist digital nets in prime base whose mean square weighted  $L_2$ -discrepancy is best possible in the order of magnitude in  $N$ , the number of points considered. We study how the constant of the leading term depends on the choice of the prime base  $p$ .

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