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Congruences for sums of reciprocals

The sums of reciprocals modulo p over integers in N subintervals of equal length of the interval $1 \leq j \leq p - 1$ are closely related to the Fermat quotients, and they have been studied in connection with the classical theory of Fermat's last theorem. In this talk we present new classes of linear relations between these sums for both even and odd N , and it is shown that for each even N there are at least $\lfloor N/4 \rfloor$ linearly independent relations. (Joint work with Ladislav Skula).