COLLOQUIUM

$$\sum_{j=1}^{\infty}$$

JOSEPH HUNDLEY

Department of Mathematics,

UNIVERSITY AT BUFFALO

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FOURIER COEFFICIENTS AT FINITE CUSPS

[ABSTRACT]

Modular forms are venerable objects in Analytic Number Theory which attained particular notoriety in the 1990s, through their connection with Wiles's proof of Fermat's Last Theorem. They are functions on the complex upper half plane which satisfy a sort of generalized periodicity property in addition to having nice analytic properties. Generalized periodicity includes ordinary periodicity in the real coordinate, giving rise to a Fourier expansion. The number theory shows up in the sequence of Fourier coefficients. But generalized periodicity is more than ordinary periodicity, so in general one must also consider alternate Fourier expansions. We shall discuss cusps and Fourier expansions at them. From this point of view, expansion in the real direction will correspond to expansion around the "point at infinity" in the projective line. We will then discuss what nice properties of the expansion at infinity do and do not extend to the finite cusps. This talk reports on joint work with Dorian Goldfeld, Min Lee, and Qiao Zhang.

SIU CARBONDALE

SOUTHERN ILLINOIS UNIVERSITY

DEPARTMENT OF MATHEMATICS