

# Local newforms for generic representations of unramified $U_{2n+1}$

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## Abstract

Newforms have their root in the classical theory of Atkin-Lehner for modular forms. In the modular form setting, newforms are cusp forms which are simultaneously eigenfunctions of all Hecke operators. Consequently, their Fourier coefficients satisfy strong recurrence relations and their  $L$ -functions are well behaved. Probably inspired by the connection between modular forms and representations of  $p$ -adic  $GL_2$ , W. Casselman developed the theory of local newforms for generic representations of  $p$ -adic  $GL_2$ . His result was subsequently extended to other  $p$ -adic classical groups by many authors. In a recent preprint, Atobe-Oi-Yasuda established the theory of local newforms for generic *tempered* representations of unramified  $p$ -adic  $U_{2n+1}$ . Their result was later extended to every generic representations in our latest work. In this talk, we will introduce these works with sketchy proofs. If time permits, we will also mention possible arithmetic applications.