

# $E$ -strings, $E_8$ Weyl invariant Jacobi forms and Conway invariant Jacobi forms on Leech lattice

*Tuesday, 23 November 2021 14:30 (15 minutes)*

In 1992 Wirthmuller showed that for any root system of type A,B,C,D,G,F and E<sub>6</sub>,E<sub>7</sub>, the ring of weak Jacobi forms invariant under Weyl group is a polynomial algebra. However, it has recently been proved that for E<sub>8</sub> the ring is not a polynomial algebra. I will present how to describe E<sub>8</sub> Weyl invariant Jacobi forms properly, both weak and holomorphic, and also how to use them in the modular bootstrap of elliptic genera of E-strings. For example, we prove that for any Weyl invariant E<sub>8</sub> Jacobi form  $\phi_t$  of index  $t$  the function  $E_4^{t/5} \Delta^{5t/6} \phi_t$  can be expressed uniquely as a polynomial in  $E_4$ ,  $E_6$  and Sakai's nine  $A_i$ ,  $B_j$  forms. This is based on a joint work with Haowu Wang arXiv:2109.10578.

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**Session Classification:** Short talks