ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

3. Number Theory and Arithmetic Algebraic Geometry

1991 MS Classification: 11, 47

Uetake, Yoichi, Adam Mickiewicz University, Poznań, Poland

A weak resolvent representation of a scattering matrix for automorphic functions

A weak resolvent of a bounded operator A on a Hilbert space H is the complex-valued function of the form $c((zI - A)^{-1}b)$, where $b \in H$ and $c \in H^*$. We represent a scattering matrix of a discrete-time Lax-Phillips scattering system, in this form, and show that this representation has some cyclic properties. We also treat the case where the incoming and outgoing subspaces D_- and D_+ are not necessarily orthogonal. We examine the scattering matrix for an automorphic wave equation on the fundamental domain $PSL(2, \mathbf{Z}) \setminus \mathbf{H}$. In this case, it can be shown that the zeros of the Riemann ζfunction correspond to the eigenvalues of A. Then the Riemann Hypothesis is equivalently expressed in terms of cyclicity.