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Darren C. Ong* (darren.ong@rice.edu), Mathematics Department MS136, Rice University, 6100 Main St, Houston, TX 77251-1892, and **Paul Munger**. *A formula for the resolvent of the doubly infinite CMV matrix.*

The doubly infinite CMV matrix is a unitary operator acting on $\ell^2(\mathbb{Z})$ that has recently emerged as a useful tool in the study of quantum random walks on the integers. For example, Cantero, Grünbaum, Moral and Velázquez have used it to discover results analogous to those that Karlin and KcGregor developed to study classical birth-and-death processes. In our work, we exhibit an expression for the resolvent of the CMV matrix in terms of the resolvents of the two semi-infinite CMV matrices that comprise its two “halves”. This expression is useful, because the semi-infinite CMV matrix is better understood than the doubly infinite CMV matrix, due to the fact that the semi-infinite CMV matrix has a stronger connection to the theory of Jacobi operators and orthogonal polynomials on the real line. We will also suggest applications of our formula in the study of quantum random walks. (Received September 21, 2012)