

8th International Conference on Symmetries and Integrability of Difference
Equations (SIDE8) **June 22–28, 2008**
8^e Conférence internationale “Symétrie et intégrabilité des équations aux
différences” (SIDE8) **22–28 juin, 2008**

On a q -extension of Mehta’s eigenvectors of the
finite Fourier transform for q a root of unity

Mesuma K. Atakishiyeva¹, Natig M. Atakishiyev², and
Tom H. Koornwinder³

¹Facultad de Ciencias
Universidad Autónoma del Estado de Morelos
C.P. 62250 Cuernavaca, Morelos
MÉXICO

`mesuma@servm.fc.uaem.mx`

²Instituto de Matemáticas
Unidad Cuernavaca
Universidad Nacional Autónoma de México
A.P. 273-3 Admon.3, Cuernavaca, Morelos, 62251
MÉXICO

`natig@matcuer.unam.mx`

³Korteweg-de Vries Institute
University of Amsterdam
Plantage Muidergracht 24, 1018 TV Amsterdam
THE NETHERLANDS

`thk@science.uva.nl`

Abstract

It is shown that the continuous q -Hermite polynomials for q a root of unity have simple transformation properties with respect to the classical Fourier transform. This result is then used to construct q -extended eigenvectors of the finite Fourier transform in terms of these polynomials.