V. Muruganandam  
Dept. of Mathematics, Pondicherry University, Pondicherry 605 014, India  
vmuruganandam@gmail.com

The Constants of Cowling and Haagerup

We give a simpler proof of the main theorem of M. Cowling and U. Haagerup ["Completely bounded multipliers of the Fourier algebra of a simple Lie group of real rank one", Invent. Math. 96 (1989) 507–549], which reads as follows. Let \( G \) be a connected real Lie group of real rank 1 with finite centre. If \( G \) is locally isomorphic to \( \text{SO}(1,n) \) or \( \text{SU}(1,n) \), then \( \Lambda_G = 1 \). If \( G \) is locally isomorphic to \( \text{Sp}(1,n) \), then \( \Lambda_G = 2n - 1 \), while if \( G \) is the exceptional rank one group \( F_4(-20) \), then \( \Lambda_G = 21 \).

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