Quantum Hall Systems on Toroidal Geometries NIALL MORAN,
JOOST SLINGERLAND, Natl Univ of Ireland Maynooth — We present results of
recent numerical calculations of second Landau level (LL) states on toroidal geome-
tries. Calculations on the torus generally allow for smaller particle numbers than
those on the sphere, due to less powerful symmetries. However, on the torus, differ-
ent candidate states for particular quantum Hall plateaus appear at equal flux, in
contrast to the situation on the sphere or plane. This means that working on the
torus allows for more direct comparisons of trial states and reduces the problem of
aliasing. Moreover, the torus brings interesting geometry, described by a modular
parameter τ. This potentially allows for a larger variety of phases as well as some
interesting limits which can be treated analytically. It also allows for the calculation
of the Hall viscosity, a quantity which corresponds to the shift on the sphere. Among
fillings considered are $\nu = \frac{12}{5}$ and $\nu = \frac{5}{2}$ where states hosting non-Abelian anyons
have been conjectured.

Niall Moran
Natl Univ of Ireland Maynooth