

# Etats électroniques corrélés dans les systèmes en dimensions réduites 16 et 17 juin 2008

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**Benoit Douçot**

LPTHE, Université Paris VI, Paris VII  
4 place Jussieu 75252 Paris CEDEX 05, FRANCE

## **Entanglement skyrmions in multicomponent quantum Hall systems**

It is by now well established, theoretically and experimentally, that the optimal way to accommodate an extra charge in a quantum Hall layer at filling factor  $\nu=1$  for spin  $1/2$  electrons is to create a spin texture centered around the charge. This is the only way to allow some form of screening in an otherwise fully gapped system. Although these textures are very well understood for a single layer, their generalization to a bilayer leaves many unanswered questions. In a joint contribution, with Mark Goerbig, Roderich Moessner, and Pascal, we have proposed to analyze the two internal degrees of freedom (spin and layer) as two possibly entangled subsystems. When the interlayer tunneling is sufficiently small, we have shown that it is possible to create a degenerate one parameter family of textures that differ by their degree of entanglement. I will discuss the conditions required for their stabilization, and give some conjectures on the collective modes sustained by these strange objects.