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Collective excitations of a crystal of CP(3) skyrmions in a bilayer quantum Hall system RENÉ CÔTÉ , DOMINIQUE BOISVERT, JÉRÔME BOURASSA, U. Sherbrooke, HERBERT A. FERTIG, U. Indiana — Recent experiments [1,2] in a bilayer quantum Hall system suggest that the quasiparticles at filling factor $\nu = 1$ could have both spin and pseudospin textures i.e. they could be CP3 skyrmions. At very low temperature, these skyrmions condense to form a Skyrme crystal. In a previous work [3], we have identified the regions of stability of this crystal in the parameter space of the bilayer system i.e. as a function of filling factor, interwell separation, potential bias, Zeeman and tunnel couplings. In this talk, we derive the spin and pseudospin response functions as well as the collective excitations of the CP(3) Skyrme crystal in the Generalized Random-Phase Approximation (GRPA). We study the behavior of the NMR relaxation time computed from the GRPA spin response function and discuss its relevance for the experiments of Refs. [1,2].

- (1) I. B. Spielman et al., Phys. Rev. Lett. **94**, 76803 (2005).
- (2) N. Kumada et al., Phys. Rev. Lett. **94**, 96802 (2005).
- (3) J. Bourassa et al., Phys. Rev. B **74**, 195320 (2006).

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