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BEC of triplon in the complex quantum spin liquid $BaCuSi_2O_6$[1]
RAIVO STERN, NICPB, Talinn, Estonia, STEFFEN KRAEMER, MLADEN HORVATIC, GHMFL, Grenoble, France, IVO HEINMAA, ENNO JOON, NICPB, Talinn, Estonia, CLAUDE BERTHIER, GHMFL, Grenoble, France, TSUYOSHI KIMURA, Osaka University, Japan, JOEL MESOT, PSI, Switzerland — We present a ^{63,65}Cu and ^{29}Si NMR study of the quasi-2D coupled spin 1/2 dimer compound $BaCuSi_2O_6$ in the magnetic field range 13-26 T and at temperatures as low as 50 mK. NMR data and neutron scattering experiments in the gapped phase reveal that below 90 K different intra-dimer exchange couplings and different gaps ($\Delta_B/\Delta_A = 1.16$) exist in every second plane along the c-axis, in addition to a planar incommensurate (IC) modulation. ^{29}Si spectra in the field induced magnetic ordered phase reveal that close to the quantum critical point at $H_{c1} = 23.35$ T the average boson density $\overline{n}$ of the Bose-Einstein condensate (BEC) is strongly modulated along the c-axis with a density ratio for every second plane $\overline{n}_A/\overline{n}_B \simeq 5$. An IC modulation of the local density is also present in each plane.

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