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Incommensurate Spin Ordering and Excitations in Underdoped $La_{2-x}Ba_xCuO_4$ S.R. DUNSIGER, Y. ZHAO, B.D. GAULIN, Dept of Physics and Astronomy, McMaster University, Hamilton, Canada, Y. QIU, J.R.D. COPLEY, NIST Center for Neutron Research, Gaithersburg, USA, H.A. DABKOWSKA, Dept of Physics and Astronomy, McMaster University, Hamilton, Canada, Z. YAMANI, W.J.L. BUYERS, Canadian Neutron Beam Centre, NRC, Chalk River, Canada — The diverse magnetic properties of the $La_{2-x}(Sr,Ba)_xCuO_4$ transition metal oxides may be tuned in a controllable way by doping with mobile holes. In one interpretation, the holes are believed to organise into correlated static or dynamic stripes. We report the first observation of static *incommensurate* spin ordering in underdoped $La_{2-x}Ba_xCuO_4$ (x$\sim$0.05, x=0.08) using neutron diffraction. Elastic collinear incommensurate peaks are observed below the superconducting transition (T_C $\sim$27 K) in $La_{2-x}(Sr,Ba)_xCuO_4$ (x=0.08). In marked contrast, diagonal satellite peaks have been observed at low temperature in positions rotated by 45° within the (HK0) plane for $La_{2-x}(Sr,Ba)_xCuO_4$ (x$\sim$0.05). Our neutron scattering results are compared with analogous studies on $La_{2-x}Sr_xCuO_4$ which indicate that such a rotation of the spin structure may be a generic feature of the underdoped La-214 cuprates.

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