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Fractionalized spin-wave continuum in kagome spin liquids JIA-WEI MEI, Perimeter Institute for Theoretical Physics, XIAO-GANG WEN, Department of Physics, Massachusetts Institute of Technology and Perimeter Institute for Theoretical Physics — Motivated by spin-wave continuum (SWC) observed in recent neutron scattering experiments in Herbertsmithite, we use Gutzwiller-projected wave functions to study dynamic spin structure factor $S(\mathbf{q},\omega)$ of spin liquid states on the kagome lattice. Spin-1 excited states in spin liquids are represented by Gutzwiller-projected two-spinon excited wave functions. We investigate three different spin liquid candidates, spinon Fermi-surface spin liquid (FSL), Dirac spin liquid (DSL) and random-flux spin liquid (RSL). FSL and RSL have low energy peaks in $S(\mathbf{q},\omega)$ at K points in the extended magnetic Brillouin zone, in contrast to experiments where low energy peaks are found at M points. There is no obviuos contradiction between DSL and neutron scattering measurements. Besides a fractionalized spin (*i.e.* spin-1/2), spinons in DSL carry a fractionalized crystal momentum which is potentially detectable in SWC in the neutron scattering measurements.

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