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Magnetic phase diagram of the spatially anisotropic spin-1/2 **zigzag ladder** MOHAMMAD SOLTANIEH-HA, ADRIAN FEIGUIN, Northeastern University — We study the magnetic phase diagram of a spatially anisotropic zigzag ladder with exchange interactions J_2, and J_2' along the legs. This system interpolates between the conventional J_1-J_2 chain, and the "sawtooth," or "delta" chain, described by a linear arrangement of triangles. Both systems display dimerization in a region of the zero-field phase diagram, but the anisotropy leads to two kinds of excitations with different velocities. We study the magnetic phase diagram of the system as a function of J_2 and J_2' and find commensurate plateaus at $m = 1/2$ and $m = 1/3$, and study the competition between different orders, including incommensurate, chiral, polar, and two-component liquid phase.

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