

Abstract Submitted  
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**The origin of the incommensurate phase in the spin Peierls compound  $\text{TiOCl}$**  ARIEL DOBRY, DIEGO MASTROGIUSEPPE, CLAUDIO GAZZA, Instituto de Física de Rosario —  $\text{TiOX}$  ( $X=\text{Cl,Br}$ ) are recently characterized Spin-Peierls compounds. They are unusual due to the appearance of an intermediate incommensurate phase between the dimerized and the uniform ones. We show that the incommensurate phase is stabilized by a linear dependency of the phononic dispersion near the dimerized mode. A model based on antiferromagnetic chains with position dependent exchanges accounts for the evolution of the atomic coordinates with temperature within the incommensurate phase. The magnetic gap closes in the intermediate phase. Finally, we find that the magnetic static structure factor has incommensurate peaks situated at twice the wave vector of the structural ones. These peaks could be found in future elastic neutron scattering measurements.

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