

# Rise and fall of frustration in Han Purple $\text{BaCuSi}_2\text{O}_6$

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The ancient chinese pigment "Han purple", also known as  $\text{BaCuSi}_2\text{O}_6$ , has stimulated a lot of debates during the past decade [1,2,3,4,5]. The very peculiar properties of the Bose-Einstein condensation transition observed upon applying a strong magnetic field [2] have been thought to be a prototypical example of an exotic dimensional reduction mechanism induced by a *perfectly frustrated* 3D coupling between bilayers. However, the perfect frustration scenario was questioned in a recent theoretical work [6]. Here we aim at giving a comprehensive overview of this material. Building on NMR [4] and neutron scattering data [7] we theoretically address the current status of this compound through two different quantum spin models, with and without frustration.

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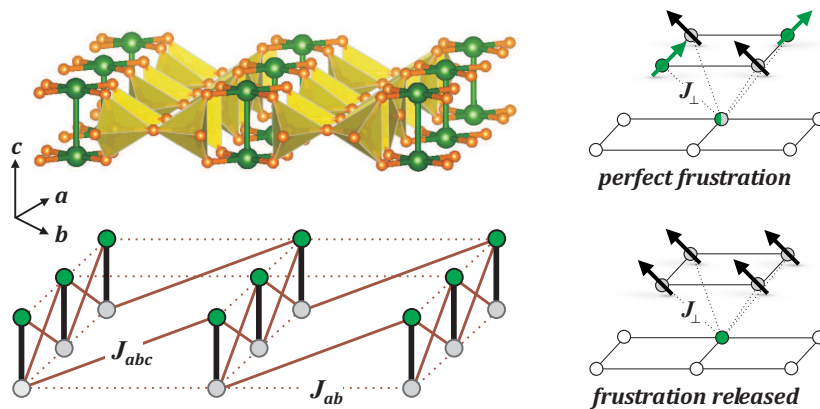


Figure 1: Two competing scenarios for the 3D coupling between bilayers units of  $\text{BaCuSi}_2\text{O}_6$