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Supplemental material

$\begin{array}{c} \textbf{MAGNETIC CONFIGURATIONS TO EXTRACT} \\ J_{in} \ \textbf{AND} \ J_{out} \end{array}$

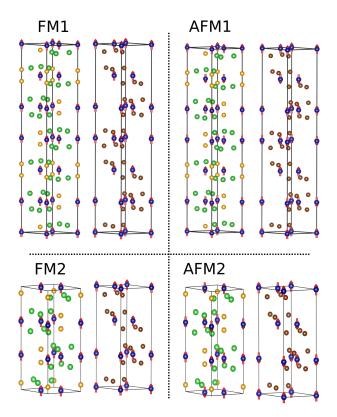


FIG. 1. Magnetic configurations used to compute the magnetic exchange constants. Cr atom in blue, Br atom in brown, Ge atom in yellow and Te atom in green.

Magnetic exchange constants $(J_{out} \text{ and } J_{in})$ were computed using the configurations shown in Fig. 1. The following equations were obtained considering a Heisenberg-type Hamiltonian

$$J_{out} = \frac{E_{AFM1} - E_{FM1}}{27}$$

$$J_{in} = \frac{1}{3} \left(\frac{2(E_{AFM2} - E_{FM1})}{27} - J_{out} \right),$$
(1)

where E_{FM1} , E_{AFM1} , E_{FM2} and E_{AFM2} are the energies of the magnetic configurations (Fig. 1).