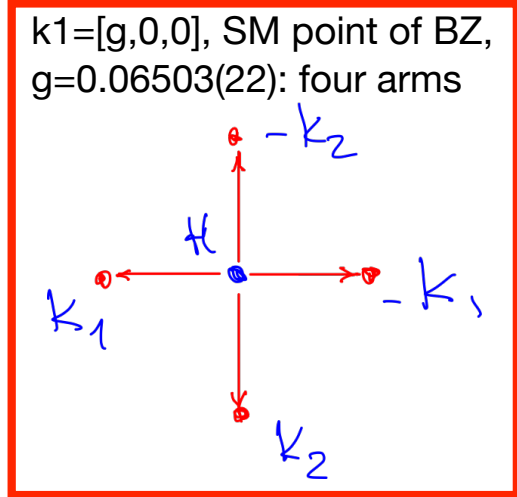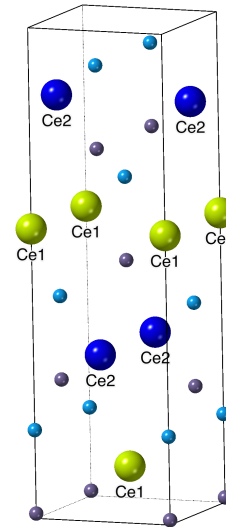# CeAlGe: Maximal symmetry full star superspace 3D+2 magnetic group I4_1md1'(a00)000s(0a0)0s0s

Parent Space Group: 109 I4_1md C4v-11,
Ce1 4a (0,0,z), z=-0.41000 single Ce site

$$\mathrm{Ce1}(0,0,z)$$
$$\mathrm{Ce2}(0,\tfrac{1}{2},z+\tfrac{1}{4})$$
$$\bar{y}, x+\tfrac{1}{2}, z+\tfrac{1}{4}$$

IR: mSM2 , k-active= (g,0,0),(0,g,0)
P (g,0;g,0) 109.2.67.4.m240.? I4_1md1'(a,0,0)000s(0,a,0)0s0s

k1=[g,0,0], SM point of BZ,
g=0.06503(22): four arms

View along the z-(c-)axis of the magnetic structure of CeAlGe.
The x- and y-axes are in units of in-plane lattice parameter a.

(M_x,M_y) components in the xy plane, M_z-component by color
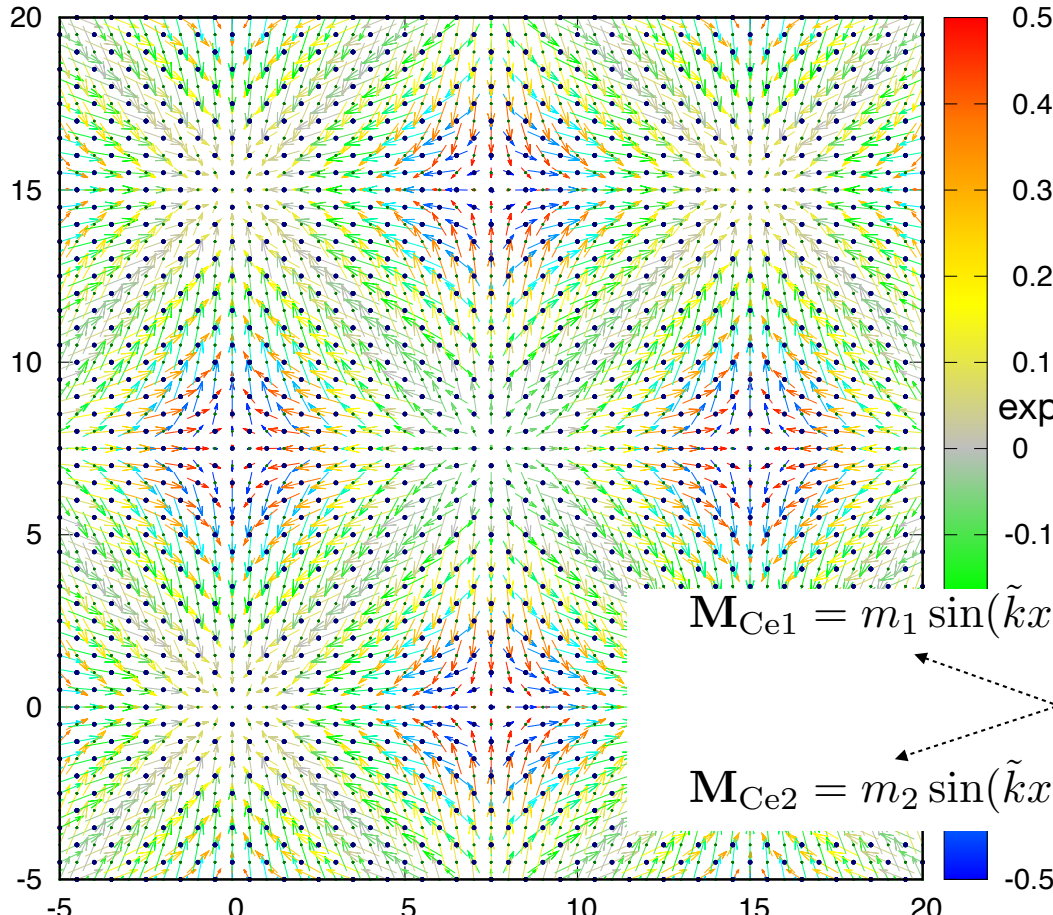
**All Ce are equivalent and their moments
are given symmetrically by 4 parameters**

experiment: (m1,m2,m3,m4) = (0.44(1), 1.02(1), −0.21(5), 0.29(7)) μ$_B$.

$$\tilde{k}=2\pi|\boldsymbol{k_1}|=2\pi|\boldsymbol{k_2}|=2\pi g$$

$$\mathbf{M}_{\mathrm{Ce1}} = m_1 \sin(\tilde{k}x)\mathbf{e_x} + m_2 \sin(\tilde{k}y)\mathbf{e_y} + \left(m_3 \cos(\tilde{k}x) + m_4 \cos(\tilde{k}y) \right) \mathbf{e_z}$$

$$\mathbf{M}_{\mathrm{Ce2}} = m_2 \sin(\tilde{k}x)\mathbf{e_x} + m_1 \sin(\tilde{k}y)\mathbf{e_y} + \left(m_4 \cos(\tilde{k}x) + m_3 \cos(\tilde{k}y) \right) \mathbf{e_z}$$

ISOTROPY Software Suite
Harold T. Stokes, Dorian M. Hatch, and Branton J. Campbell, Department of Physics
and Astronomy, Brigham Young University, Provo, Utah 84606, USA,

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