

g_\epsilon and sl_2

February 18, 2017 10:24 AM

$$\mathfrak{g}_\epsilon := \langle b, c, u, w \rangle / [u, c] = -u, [w, c] = w, [u, w] = b - 2\epsilon c$$

$$\mathfrak{sl}_2 = \langle e, f, h \rangle / [e, h] = 2e, [f, h] = -2f, [e, f] = h$$

$$\mathfrak{g}_\epsilon / \langle b \rangle = \langle u, w, c \rangle / [u, c] = -u, [w, c] = w, [u, w] = -2\epsilon c$$

$\mathfrak{sl}_2 \rightarrow \mathfrak{g}_\epsilon / \langle b \rangle$ by

$$e \rightarrow u/\epsilon \quad \text{so} \quad [e, h] = 2e \rightarrow [u/\epsilon, -2c] = 2u/\epsilon \quad \checkmark$$

$$f \rightarrow w \quad [f, h] = -2f \rightarrow [w, -2c] = -2w \quad \checkmark$$

$$h \rightarrow -2c \quad [e, f] = h \rightarrow [u/\epsilon, w] = -2c \quad \checkmark$$