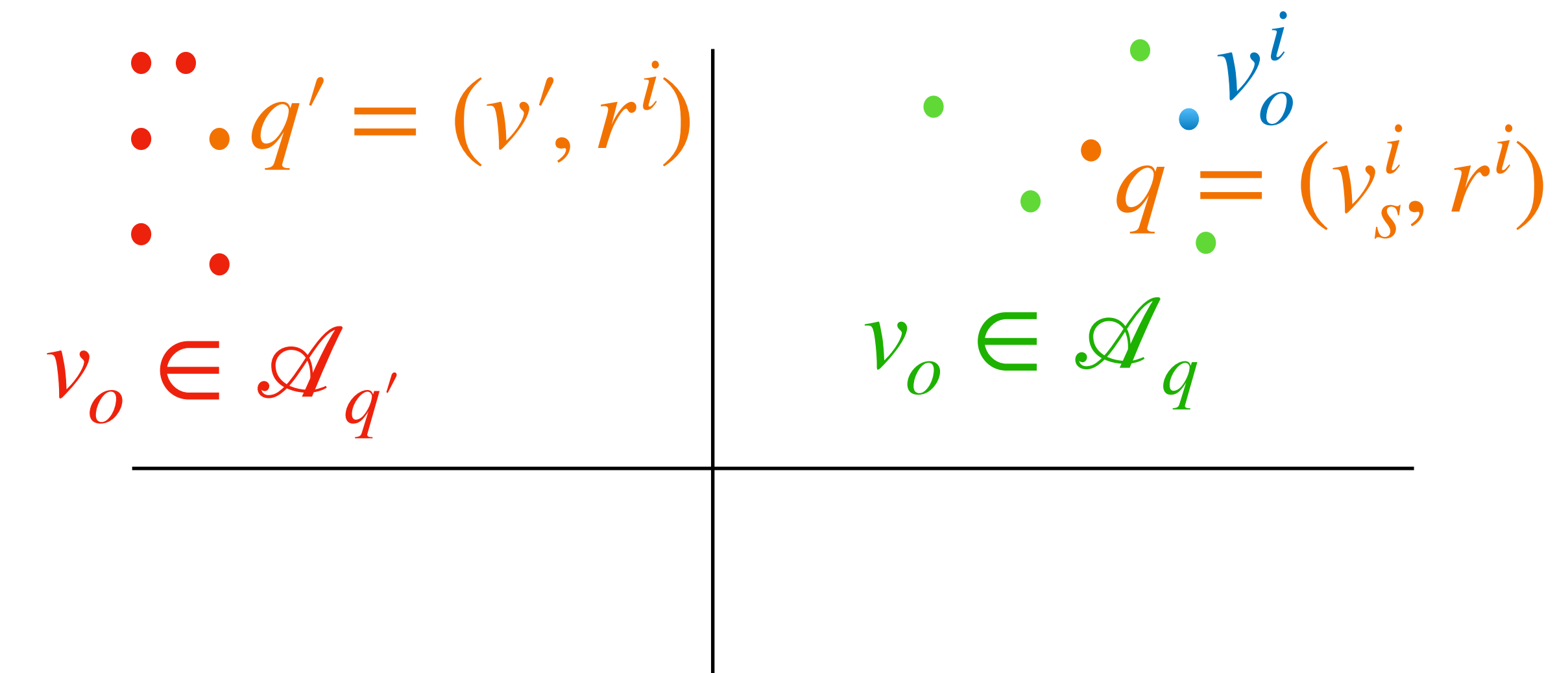Augment related facts for (v_s^i, r^i, v_o^i)

Align tails with residue

$q' = (v', r^i)$

v_o^i

$q = (v_s^i, r^i)$

$v_o \in \mathscr{A}_{q'}$

$v_o \in \mathscr{A}_q$

v_o^i

$\mathscr{N}_{\mathrm{res}}$