Parity violation in heliumlike Europium

Weak interaction

$$H_w = - \frac{G_F}{2\sqrt{2}} Q_w \rho_N(r) \gamma_5$$

$$Q_w = Z(1 - 4 \sin^2\Theta_W) - N$$

$$I = \frac{5}{2}$$

Beam polarization by a polarized stripping foil.
Hydrogenlike ions are separated.
Selective electron capture leads to heliumlike ions in the $2\,^1S_0$ state.

Hyperfine mixing leads to the M1-transition:
$2\,^1S_0 \longrightarrow 1\,^1S_0$

Additional decay channel

$2\,^1S_0 - 2\,^3P_0$ mixing due to H_w
$2\,^3P_0 - 2\,^3P_1$ mixing due to H_{hfs}

Angular asymmetry of photon emission with respect to the foil polarization: $2 \cdot 10^{-4}$