

— true
----- false

(0) idle

- Host loads input file to FIFO
- $r_Z = r_{Z_{up}}$
- $r_X = 0, r_Y = 0$

Trigger if: host says go

j=0

(1) xy-move

- Load setpoint from FIFO: $r_X = r_X^j, r_Y = r_Y^j$
- Keep $r_Z = r_{Z_{up}}$
- Set $K_{I_z} = 0$

Trigger if: $|X_k - r_X| < TOL, |Y_k - r_Y| < TOL$ for N_{xy} samples

(2) Tip-engage

- Keep $r_X = r_X^j, r_Y = r_Y^j$
- Set $r_Z = r_{Z_s}$

Trigger if: $|d_{fl} - r_{z_s}| < TOL$

k=0

(3) tip-settle (pre-scan)

- Keep $r_Z = r_{Z_s}$
- Set $r_X = r_X^{j+k}, r_Y = r_Y^{j+k}$
- Set $K_{I_z} = K_{I,scan}$

Trigger if: $k > N_{prescan}$

(4) μ -path scan

- Keep $r_Z = r_{Z_s}$
- Set $r_X = r_X^{j+k}, r_Y = r_Y^{j+k}$

Trigger if: scan trajectory is finished

(5) tip-up

- Set $r_Z = r_{Z_{up}}$
- Keep $r_X = r_X^{j+k}, r_Y = r_Y^{j+k}$

Trigger (A) if: $|d_{fl} - r_{Z_{up}}| < TOL \ \&\& \ j < N_{paths}$

Trigger (B) if: $|d_{fl} - r_{Z_{up}}| < TOL$

j++

k++

k++