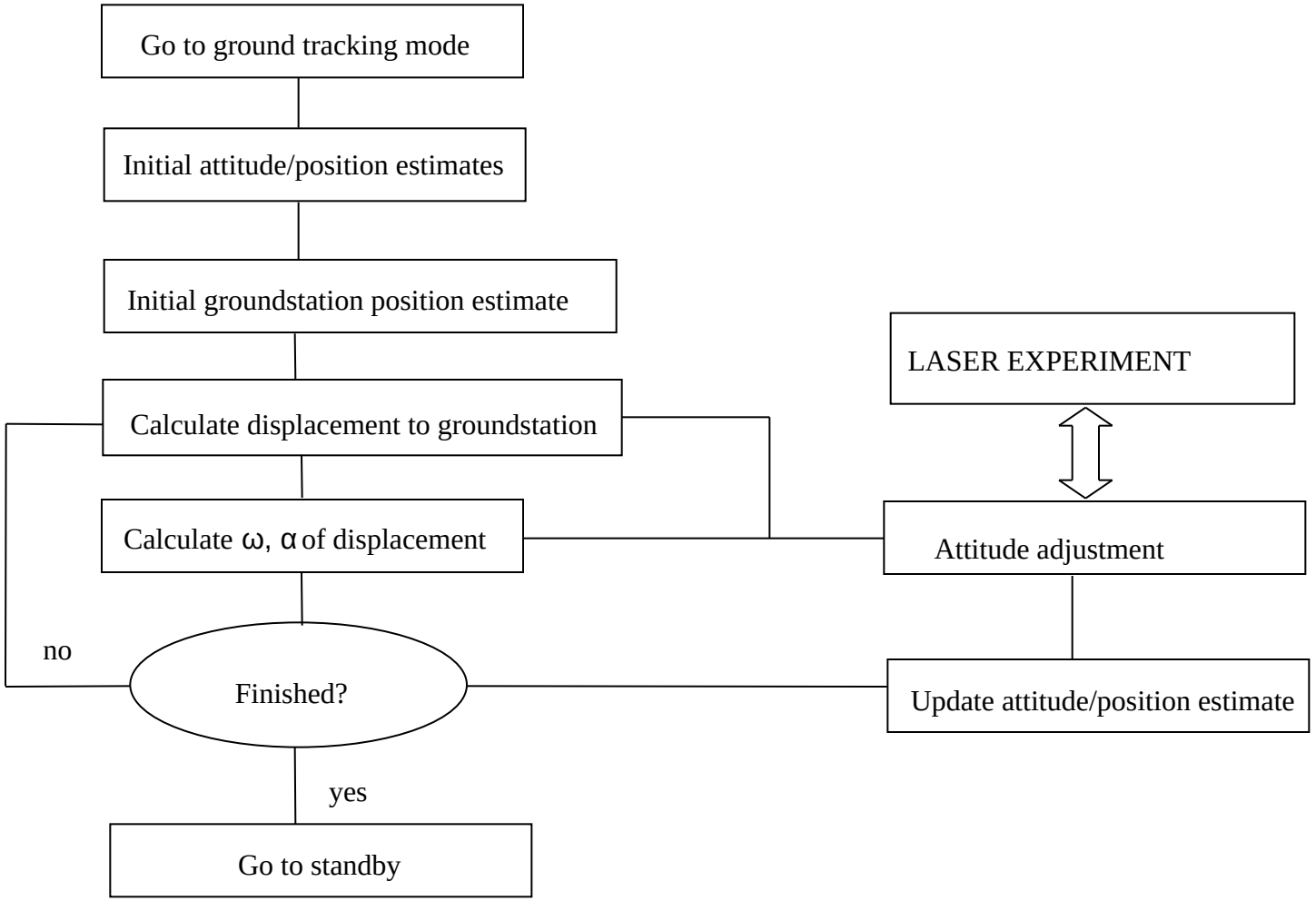
DEPLOYMENT

- Reaction wheels spin up
- get initial attitude and position from space shuttle
- satellite ejected
- initial stabilization using gyros and magnetometer (possibly magnetic torquers)
- Diagnostics
- Initial attitude estimate
- Standby mode

GROUND STATION TRACKING



DETUMBLING/RECOVERY

- Determine if satellite is tumbling
- Send distress signal to other systems to immediately stop other modes and begin reacquisition
- Diagnostics
- Restabilize satellite using control system and information from magnetometer and rate gyros
- Estimate attitude
- Realign satellite to proper attitude and commence with normal control mode

Momentum Dumping

- obtain speed of rotation for each of the four wheels from sensors
- obtain reading for the magnetic field from the magnetometer
- If angle is close to 0 for one of the rods then wait for a better opportunity to dump momentum about that axis (because if the angle is close to 0 or 180 between the B vector from earth and the b vector that can be created by the rod then they are pointed close to the same direction and to dump momentum using that rod would require quite a bit of energy)
- apply necessary torque to the satellite

Sun Pointing

1. entering sun point mode
2. reading sun sensors in range?
3. while sun present
   a. read sun sensors
   b. determine sun vector
   c. read thermo-couples to get temperature distribution
      in satellite.
   d. compute update for desired attitude
   e. compute torques to correct current attitude
   f. apply torques
   g. get ouput solar cells and compare results with
      the output of the sun sensors. Enter some
      error recovery mode (SUN_SENSOR_TROUBLE).
      We need to know if there's any trouble with the
      solar cells
   h. determine if the sun is still present
4. return

Star Pointing

- Get attitude
- Get desired attitude for science instrument
- Compute and apply control torques
- Maintain attitude
- Return to Standby mode