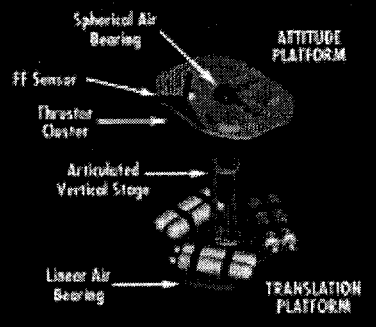
FORMATION CONTROL TESTBED (FCT)

SYSTEM-LEVEL VALIDATION OF FORMATION FLYING CONTROL IN A HARDWARE TESTBED

CONCEPT

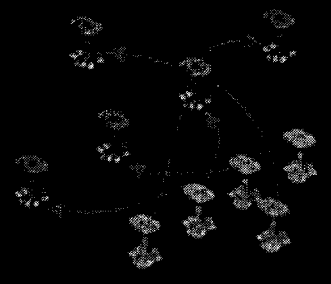


- Three robot formation
- Six degrees-of-freedom using spherical/linear air-bearings
- Robot Size/Weight: ~4 ft tall x 4ft diameter, ~780 lbs each
- Operation duration per charge of gas: ~1 hr
- Mechanical flat floor with glass top
- Operating area: ~30ft diameter
- Performance:
  - Formation Control: +/- 5cm
  - Attitude Control: +/- 5 arc-min
- On-board Avionics (each robot):
  - Avionics Computer (PPC750), Cold gas propulsion – 16 thrusters, Reaction Wheels – 3 single axis, Pseudo-Star Tracker, Formation Sensor (inter-s/c range/bearing), Wireless communication
- Flight-like commanding and telemetry

ENG
LAY

FORMATION FLYING DEMONSTRATIONS

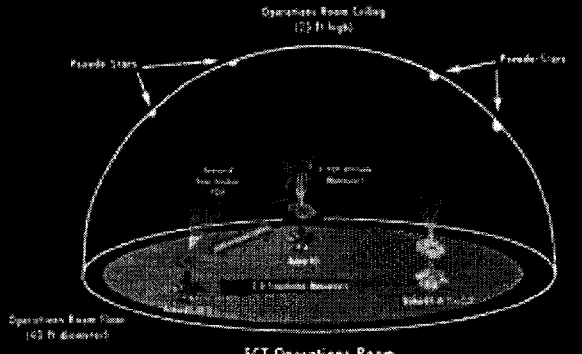
Collision Avoidance



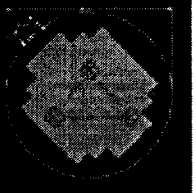
Formation Acquisition

FCT OPERATIONS

Formation Technology Lab (FTL)



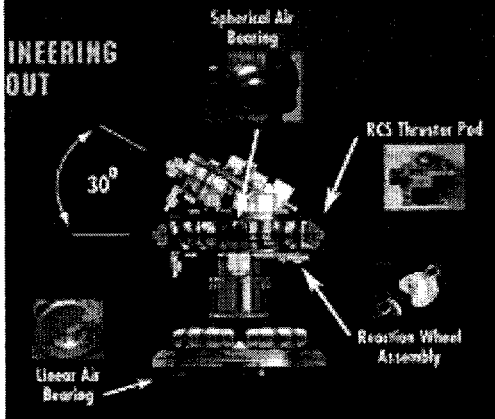
FCT Operations Room



Mosaic Flat Floor with Glass Surface Panels (top view)

NASA

INEERING
OUT



servation On-the-Fly
(av filling)

Single Flat Floor Panel (adjustable level)