

## O'Neill habitat spin axis

**Source:** <http://sci.tech-archive.net/Archive/sci.space.tech/2004-08/0073.html>

---

**From:** Russell Wallace ([wallacethinmintr\\_at\\_eircom.net](mailto:wallacethinmintr_at_eircom.net))

**Date:** 08/24/04

To: [sci-space-tech@moderators.isc.org](mailto:sci-space-tech@moderators.isc.org)

Date: Tue, 24 Aug 2004 18:06:14 GMT

I'm designing an O'Neill habitat for use in a game scenario, where I'm trying to keep the science as plausible as possible. It's going to be the classic "spinning tin can" design, surrounded by an array of solar panels, mirrors and radiators (and directly in orbit around a star, rather than a planet, though I could change that if there was reason to do so). My question is about the spin axis.

I'd ideally like to point it at the sun. Then the nearside cap could be coated in solar cells while the rest of the surface is painted black to help radiate heat.

But in that case, it seems that a quarter orbit later it'll be side on to the sun, another quarter orbit the opposite end will point at the sun etc, since conservation of angular momentum will tend to keep the spin axis pointing in the same direction relative to the rest of the universe, not relative to the sun.

Is there any way to change that (I mean, reasonable ways, i.e. without expending propellant or using huge gyroscopes etc)? For example, Earth's axis precesses every 26,000 years IIRC; how does that square with conservation of angular momentum? Is there a way a habitat's axis could be made to "precess" through a full circle every year?

Or if not, is the best solution then to orient it vertically, let most of the surface be mirror colored, and paint the end caps black?

(Another question: Has anyone investigated the question of what the rate of leakage of volatiles from a habitat would be, and what would be the limiting factors on how low you could make it?)

Thanks,

--

"Sore wa himitsu desu."  
To reply by email, remove  
the small snack from address.