

Fuller-Clarke Sphere

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Introduction: The purpose of the Fuller-Clarke Sphere (F-C Sphere) is to provide planetary services analogous to a Dyson Sphere [1] but scaled down to planet size and combined with Arthur C. Clarke's (et.al.) Space Elevator [2] concept. Space Elevators are strategically placed on the planet based on R. Buckminster Fuller's "Great Circles" [3] of a geodesic sphere constructed around the planet using material harvested from the asteroid belt. The F-C Sphere, a Civilization Type ~I.V invention [4], is parked in geostationary orbit and conceived for Planetary Defense from collisions with >~100-m class asteroids (NEOs). It is envisioned as a network of geodesic frames and interconnecting flexible lattice structure nets arrayed within the geo-grid surrounding the planet. In a worst case scenario, the space frame grid is sacrificial - it catches and crumples; collapsing or stretching to absorb the shock of an incoming extinction event asteroid. The F-C Sphere is also principally and globally utilitarian. Given the scale of engineering required, the primary geodesic great circle chords will necessarily be large diameter sections capable of being inhabited and used for planetary circulation; connecting 12 Space Elevator/Space Station Cities at each vertexes corresponding to the icosahedron vertex points. The natural urbanization at Space Elevator locations will expand the planet's living volume, invoking space ports, transport conduits, energy and resource conveyance, solar collecting or albedo shading, planetary monitoring, communications (without satellites), and orbital station-keeping technology to mention a few. If an NEO approaches on a collision course, internal rail (Hyperloops [5]) shunt inhabitants (commuters around the planet) to safe areas of the 'geo-grid' beyond the crumple zone. Entire inhabited lengths can also jettison off of the great circles or any occupied tributary structural 'spines'. External rail/conveyance systems can provide mobilization of utilities, telescope, or a myriad of space monitoring technology while a rail/conveyance system on the earthward side provides global planetary services and monitoring. Rail gun/mass-drivers are positioned centered within each vertex 'Lift' station; providing kinetic projectile capabilities for ballistic intercept of NEO's as well as launching solar system and deep space platforms. Directional control is proposed using 'Gaussian Focus' – rail mounted super magnets arranged in a radial geometry and adjusted in position and strength to influence outgoing flight paths of magnetically responsive projectiles.

References: [1] Joseph F. Baugher (1985) *On Civilized Stars, The Search for Intelligent Life in Outer Space*: 114. [2] Wikipedia (2017) https://en.wikipedia.org/wiki/Space_elevator. [3] Hugh Kenner (1976) *Geodesic Math*: 50-53. [4] Joseph F. Baugher (1985) *On Civilized Stars, The Search for Intelligent Life in Outer Space*: 112. [5] Elon Musk: Hyperloop One (2016) <https://hyperloop-one.com/>.

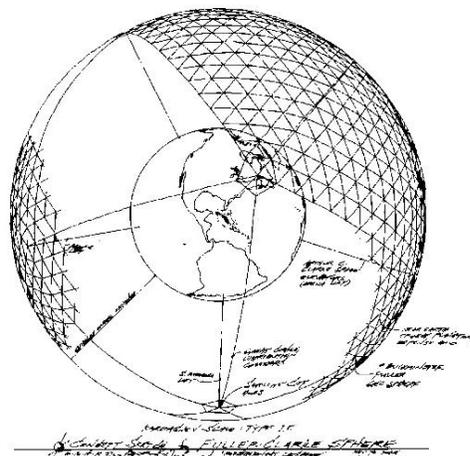


Figure 1 – Schematic Sketch of the Fuller-Clarke Sphere