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VTOHL (Vertical-Takeoff and Hovercraft-Landing) Mode for Air-Spacecraft of the Third Millennium Traveling on the Hyperbolic Trajectory, Military Version (ASTM 786-H-M)

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Abstract **–** This work adds VTOHL (Vertical-Takeoff and Hovercraft-Landing) mode to *Air-Spacecraft of the Third Millennium*, traveling on the hyperbolic trajectory, military version (ASTM 786-H-M), which is lunched in a vertical position (passengers rest in reclining seats, parallel to the surface of earth to minimize effects of high acceleration on blood flow away from the brain) to travel on a linear trajectory above the atmosphere (standard procedure for rocket launching) and then put into the hyperbolic trajectory using the extended-Q system (position and velocity vectors managed, simultaneously, through the normal-component-cross-product steering expressed in the hyperbolic-astrodynamical-coördinate mesh). Further check is performed through the normal-component-dot-product steering expressed in the hyperbolic-astrodynamical-coördinate mesh, accomplishing vanishing of the down-range/the cross-range errors. ASTM 786-H-M now lands in hovercraft mode (suspended above the ground, allowing passengers and cargo to be downloaded through ropes and chains), allowing the landing possible in mrsh (soft muddy) landscape as well as in thick forests (wet landscape) and deserts (soft sand reserves); crew communicate among themselves through secure-encrypted messages employing cipher code. Recall that magnetic-levitating trains, also, run above the tracks. This should eliminate the need of long runways and is an added safety feature (in the near past, the President of India, Her Excellency Draupadi Murmu, nearly escaped death, when her helicopter's helipad collapsed (one side of earth sinked causing imbalance) during landing in Kerala, India. Fuel economy should allow ASTM 786-H-M to travel halfway through globe, executing its missions and returning without refueling.

Video-Recorded Presentation • Program (11th page, 4th entry) • Certificate of Participation • Abstract Booklet • Full Text

Keywords – Extended-Q system, Hyperbolic-astrodynamical-coördinate mesh, Marsh landing, Normal-component-cross-product steering, Normal-component-dot-product steering, Two-body problem ASTM 786-H • Secure communications • SDI

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