1. Libration Point Navigation Concepts Supporting the Vision for Space Exploration
   1. <https://www.researchgate.net/profile/C_Gramling/publication/4707030_Libration_Point_Navigation_Concepts_Supporting_Exploration_Vision/links/5436c54f0cf2643ab988891b.pdf>
   2. Examines navigation accuracy achievable for lunar exploration, using a nav sat at a libration point, augmented by gps
   3. Compare libration to lunar orbit for nav relay architectures
   4. GPS Issues for Cis-lunar trajectories
2. En route to the Moon using GNSS signals
   1. <https://www.researchgate.net/profile/Giovanni_Palmerini/publication/229351299_En_route_to_the_Moon_using_GNSS_signals/links/550fe4f80cf21287416c610b.pdf>
   2. Evaluates carrier-to-noise levels during different phases compared to current receivers
   3. Possible software receiver application
3. Use of Weak GNSS Signals in a Mission to the Moon
   1. <http://spcomnav.uab.es/docs/conferences/Moon_GNSS2014.pdf>
   2. ESA Moon-GNSS project seeks to determine feasibility of weak signal tech to improve navigation accuracy, reduce cost, and improve autonomy
   3. Challenges faced
      1. Less visibility,
      2. low signal strength,
      3. poor sat geometry,
      4. earth/moon signal occultation,
      5. space craft dynamics
   4. Identification of receiver requirements
      1. Impact of requirements on receiver module architechture and algorithms(Weak signal processing, filtering, and navigation)
   5. Integration of gnss with other sensors(IMU/accelerometers)
   6. Demonstration tests carried out to cover all mission phases
4. Assisted GNSS Navigation in Lunar Missions
   1. <https://www.researchgate.net/profile/Giovanni_Palmerini/publication/269163714_Assisted_GNSS_Navigation_in_Lunar_Missions/links/550fe0230cf2ac2905af53c0.pdf>
   2. Moderate availability of weak signals with frequent outages
   3. Software receivers able to capture signals
      1. Computing nav message remains difficult task
   4. Approach to obtain navigation solution is analyzed
      1. Relevant requiements for clock and orbit propagator discussed
   5. Potential to save operational costs related to ground support and tracking
5. GNSS-based Orbital Filter for Earth Moon Transfer Orbits
   1. <https://www.cambridge.org/core/journals/journal-of-navigation/article/gnss-based-orbital-filter-for-earth-moon-transfer-orbits/050B00CA697DD2339BEE061048DC0ADB>
   2. Adaptive orbital filter
      1. Fuses GNSS observations with orbit forces model
      2. Simulation results show accuracy significantly higher than with standalone GNSS or pure orbital propagation
6. A GPS Receiver for Lunar Missions(ION)
   1. <https://www.ion.org/publications/abstract.cfm?articleID=7685>
   2. Reduce reliance on DSN
   3. “Navigator”
      1. Developed at GSFC
      2. At its heart is a Field programmable gate array(FPGA) based acquisition engine
         1. Rapid acquisition/reacquisition of strong gps signals after outage
         2. Lower sensitivity, allowing acquisition high above gps constellation
      3. Asses Navigator at earth ascent, cislunar navigation, and entry
      4. Navigator connected to Spirent GPS signal generator to allow for collection of real-time, hardware in loop results for each phase of flight
      5. Navigator assessed under dynamical environment unique to mission phase trajectory
7. GNSS-Based Navigation for Lunar Missions(ION)
   1. <https://www.ion.org/publications/abstract.cfm?articleID=12471>
   2. Overview of tools/methodology used in LunarGNSS project
   3. Final results of LunarGNSS study
      1. Expected environment characteristics
      2. GNSS based nav performance achievable with proposed nav system architecture
8. Weak GNSS Signal Navigation for Lunar Exploration Missions(ION)
   1. <https://www.ion.org/publications/abstract.cfm?articleID=12876>
   2. Carrier to noise ratio levels as low as 10 to 15 dBHz
   3. Investigate mission phases
      1. Transfer orbit
      2. LLO
      3. Lunar ascent/descent
      4. Surface operations
      5. Nav at L1&L2
   4. Suggest GNSS receiver architecture
      1. Snapshot receiver w/ limited ground station aiding to help with/substitute info from nav message
      2. Integration with other sensors required for ascent/descent and LLO (INS and Radar altimeter)
   5. Build off of on-board navigation propagator, includes kinematic model during outages
   6. Mission date has slight effect on performance
   7. Single steerable high gain antenna considered baseline for study
   8. Developed snapshot receiver sim in matlab
      1. Start with GPS L1 C/A signal then data-less pilot signals of Galileo E1 C and Galileo E5-Q/b-Q services
   9. Suggested receiver concept relies on ground station aide or update from INS
   10. Important for low-thrust missions
9. Orbital Filter Aiding of a High Sensitivity GPS Receiver for Lunar Missions(ION)
   1. <https://www.ion.org/publications/abstract.cfm?articleID=13422>
   2. Adaptive orbital filter to aid GNSS acquisition/tracking
   3. Describes orbit filter architecture
   4. Tested with sprient GSS 8000 full constellation simulator for a highly elliptical MTO