

GR 5: Plenarvortrag Fritz Merkle

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Plenarvortrag GR 5.1 Di 11:45 HS 2010
Satellites for the European GALILEO Navigation System —
•FRITZ MERKLE — OHB SE, Bremen, Germany

The GALILEO Navigation Satellite System is Europe's equivalent to and interoperable with the US GPS navigation system. In its final configuration the system will consist of 24 plus 6 spare operational satellites in Medium Earth Orbit at an altitude of 23222km. Key elements of the satellite payloads are the ultra-high precision clocks. Each satellite is equipped with two Rubidium Atomic Frequency Standards and two Passive Hydrogen Masers with short term stabilities in the range of $5E-14$ to $5E-15$, respectively. Flying two technologies provides a high degree of reliability and redundancy. By today 18 Galileo Satellites are deployed in space and early operation of GALILEO has been announced recently. The challenge of designing and manufacturing the satellites has to take into account that the satellites have

to be delivered in a cadence of one satellite every six weeks. Additionally, there is the challenge of providing for these precision timing instruments the appropriate physical environment inside the satellite platform, taking into account a minimum lifetime of 12 years and this under considerations of economy. Another set of 2 times 4 satellites will be launched in 2018 and 2019. 8 to 12 more satellites are currently in the procurement phase by the European Commission. In its final implementation GALILEO system with Full Operation will provide several satellite-only services, including the Open Service, the Safety-of-Life Service with very high integrity, the Commercial Service with improved accuracy, and the Public Regulated Service with controlled and encrypted access. In addition GALILEO will support the search and rescue service as a European contribution to the international COSPAS-SARSAT co-operative. This presentation will introduce GALILEO and the physical and entrepreneurial challenges of navigation satellites.