



## **The ultimate for Pc1 pulsation research, continuous multi-point space observations within a common flux-tube volume: the RESONACE project**

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The space project RESONANCE aims at studying wave-particle interactions and plasma dynamics in the inner magnetosphere. The main goals of the project are long-term observations of natural phenomena such as: (i) dynamics of magnetospheric cyclotron masers, (ii) ring current formation, (iii) impact of small-scale phenomena in the global plasma dynamics. A satellite at a specific orbit is able to provide measurements along a single magnetic flux tube during a sufficiently long time interval. There exists an optimal orbit for any given magnetic flux tube and required observation time when it is taken into account that the magnetic flux tube co-rotates with the Earth. It turned out that actually two satellites are needed to guarantee long enough observation times at field lines near the plasmapause which are of specific interest. So two satellites will be launched (presumably in 2011) in a so called magneto-synchronous orbit which will be conjugate on the ground to a concentrated network of observation sites including radars and HF heating facilities. The satellites will up to forty minutes be in the flux tube with its footprint in the ionosphere over the HAARP heater facility, while one of them will be in the northern and the other in the southern hemisphere. In context of Pc1 pulsation research the satellites' constellation (and instrumental outfit) is unique to resolve, for instance, one of the – up to now- most persistent problems: to which degree and by which mechanism does the ionosphere take part in the generation and spectral shaping of the Pc1 emission. The RESONANCE project will also allow to actively affect the conditions for Pc1 generation.