RadioNet support for Short Term Missions
Application form

STM INFORMATION	
APPLICANT 'S NAME	Samuel López Ruiz
APPLICANT'S AFFILIATION	PhD Student at Yebes Observatory (IGN)
HOST INSTITUTE	*OSO*
DATE OF THE STM	*8th to 21th of May*
TOTAL COST OF STM	*1500 €*
OTHER SOURCES OF FUNDING	*IGN Funds*

Request *(max. 2,5 pages)*

Topic	*Yebes Observatory and OSO participate in Radionet BRAND EVN activities. In particular in the Receiver frontend task. Both groups are in charge of the feed development and they both have started different related developments independently. I'm involved in Yebes feed development. My stay would be dedicated to share my activity research in that field and to identify possible mutual areas of work. In particular, optimization methods in feed design can be explored.*
Proposed work	*Different broad-band feeds for prime focus will be evaluated (e.g. Quad-ridge feed horn - QRFH,Eleven-feed (OSO), Dyson conical quad-spiral array – DYQSA (UAH)). The different techniques that are used to simulate, optimize and characterize the feeds will be analyzed. Possibilities for injecting noise-calibration signals at the feed level will be investigated. Feed solutions for EVN telescopes for BRAND project will be also evaluated.*
Cross-disciplinary	*OSO and Yebes both have experience in Low noise technological developments. They also have a common interest in BRAND EVN. They are also working in VGOS (VLBI Global Observing System) and they have just built identical 13.2 meter radiotelescopes. A joint effort between both institutes could be of great interest for both and for Astronomical and Geodetical VLBI communities. As the final product is a prototype, industry could have benefits of manufacturing these high precision components.*
Impact	*The design of broadband antennas is a current problem in radio astronomy. Joining the knowledge of both institutes for the feed design and low noise techniques will have a big impact in the radio astronomical community. The developments result of this collaboration could be use by the whole radio astronomical community.* *This stay could increase synergies between both groups and could improve the efficiency of our work, as we are participating on the same project and same fields.*

RadioNet has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No 730562

Curriculum Vitae	*Master´s Degree in Telecommunications Engineering University of Alcala (Spain). Graduated top of the class. Final Grade: 9.12/10* *Bachelor´s Degree in Telecommunications System Engineering. University of Alcala (Spain). Graduated top of the class. Final Grade: 8.88/10.* *Electromagnetism skills:* *- Electromagnetic simulation: CST MWS, PCAAD and Genesys.* *-Physical Optics simulation: GRASP.* *-Anechoic chamber measurements.* *-Radio telescope feeds design.* *-Radio astronomical receivers design.* *-Measurements Instrumentation: Vector Network Analyzer, Oscilloscope, Spectrum Analysis.* *Computer skills:* *- Matlab.* *- AutoDesk.* *- Microsoft Visual C, Microsoft Visual C++, VBA, Python, VHDL* *International publications:* *- "Optimization of a Conical Corrugated Antenna Using Multiobjetive Heuristics for Radio-Astronomy Applications". S. López-Ruiz, R. Sánchez-Montero, F. Tercero-Martínez, P.L. López-Espí and J.A. López-Fernández. International Journal of Antennas and Propagation.* *- "Multi frequency feed system for high magnification Cassegrain radiotelescopes at millimeter wavelengths". Samuel López-Ruiz, Félix Tercero Martínez, Pablo López-Espí, Rocio Sánchez-Montero and Seog-Tae Han. EUMW 2016.XXX*

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