IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (IP)

Author: Ms. Chloe Mireault-Lecourt
Université de Sherbrooke, Canada, QMSat@Usherbrooke.ca

Mr. Frédéric Perron
Université de Sherbrooke, Canada, Frederic.Perron@UShebrooke.ca
Mr. William Grand-Maison
Université de Sherbrooke, Canada, William.Grand-Maison@USherbooke.ca
Mr. David Roy-Guay
Université de Sherbrooke, Canada, David.Roy-Guay@USherbrooke.ca

ANTENNA DESIGN WITH MEASURING TAPES WORKSHOP

Abstract

During the '80s, there was a great number of radio amateur enthusiasts. But, since the advent of the mobile phone, this hobby has lost many adepts.

When the the QuantumMagnetoSatellite - *QMSat* - team was asked about radio amateurs, it was clear that this area was unknown to them because their generation has never been initiated to this during their high school. To involve the next generation in science and technology, the team proposes to develop a workshop on antenna design.

The purpose of the workshop would be to design low cost antennas with a minimum of equipment: measuring tapes and PVC tubes. Based on Joe Leggios's ($WB2HOL$) popular internet model, students would build their antennas and test them afterwards. Depending on the student's level of education, three types of activities are planned:

- Two independent teams assembling two identical antennas and then accomplishing a successful communication between the handmade antennas.
- Two independent teams assembling two different antennas (variable numbers of driven elements, tape lengths, etc.) and listening to FM radio to compare the results between the antennas.
- Assembling antennas to use UHF (70 cm) and VHF (2 m) frequency bands followed by a communication test with a HAMSat.

For the workshop to be successful, the QMSat team will have to design different types of antennas and analyze the effects of variations to the WB2HOL design. Thus, the development of this workshop will be a good academic challenge for the team. The professors will overview the scope, the methodology and results of our activity.

Antenna development with measuring tapes will not only be useful for the workshops; as part of the last year of their engineering studies, the QMSat team will design a CubeSat. The telecommunication team will be able to use the research and the conclusion of the workshops to analyze the feasibility of using measuring tapes antennas on the satellite itself. Another goal of the project is to do outreach activities in high schools. As of today (March 2018), the team has presented their project to 75 students. This number will keep increasing as they develop more workshops and as the project becomes more defined. They also plan to delegate some tasks related to the project to high school students. For example, the team already have a partnership with a high school for girls and they will help develop a part of the website.