

Review angeo-2021-26

## Space Weather Study through Analysis of Solar Radio Bursts detected by a Single Station CALLISTO Spectrometer

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The paper is a summary of results of solar radio bursts analysis observed by the e-Compound Astronomical Low cost Low-frequency Instrument for Spectroscopy and Transportable Observatory (e-CALLISTO), comprising the period Oct 2014 – Sept 2015, at the University of Rwanda, College of Education. Main motivation of this study is formulated to use radio burst data to check their correlation with solar activities.

In Chapter 1 – „Introduction“ a (too) short overview is presented on the morphologies of the various types of solar radio bursts, indicating the registration of 5 Type II bursts, 175 Type III bursts, and 22 Type IV bursts within the given period of observation. The data base of Type II and Type IV bursts is rather scarce, apparently owed to the limited sensitivity of the used antennas. At this point a more detailed description of the applied instruments (antennas and backend facilities) is strongly recommended.

Among the mentioned spaceborne and ground-based radio observatories (lines 34 – 39) reference should be given to renowned radio telescopes of Nançay (France) and Charkiv and Poltava (Ukraine), resp., which provide with their huge arrays excellent observations in the decameter range.

In Chapter 2 – „Observation and methods“ a comparison and supplementary investigation of the e-CALLISTO results with observations of other stations would enable a better classification and judgement of the quality of the e-CALLISTO results obtained at the College of Education, University of Rwanda. Among other stations the use of the world-wide distributed e-CALLISTO network just offers this opportunity.

In Chapter 3 – „Results and discussions“ the obtained radio data are listed in tables (including an online-link for the Type III burst data which however – checked on different days - is unavailable !) with the „associated“ solar phenomena (Table 1 and Table 3). In this respect the terms „associated“ and „related“ (line 72) need a clear definition. Table 2 is trivial and its content can be described in not more than two short sentences.

The solar radio burst observed on Aug 22, 2015, had a frequency stop at 45 MHz (according to Table 1) whereas in the text (line 82) 46 MHz are given.

Figure 2c visualizes a CME image where the red line is considered as the CME shock height. This needs a clear physical justification.

Figure 3 shows running difference images with the last image taken at 10:04:05 UT, correctly cited in the figure legend, whereas in line 103 the time 10:05 UT is mentioned.

As the title of the paper indicates ( „Space Weather Study ...“) this branch of space physics comprises the varying conditions within the solar system, caused by the sun, including near-Earth conditions, e.g. in the magnetosphere and ionosphere. At least some examples of strong solar radio emission observed by e-CALLISTO and connected with solar plasma phenomena (flares, CMEs, shock waves) and their impact on Earth would clearly demonstrate the „main motivation of this study“ as mentioned above.

It should also be pointed out in what phase of solar cycle the observations have been performed in order to evaluate the number, the kind and strength of radio bursts and their connection to solar phenomena.

A few typos should be corrected:

The paper title should correctly be written: „CALLISTO“ (missing „I“)

Abstract, line 2: „Spectroscopy“ (capital „S“)

Line 47: „Education“ (capital „E“)

Table 2 legend: „Summary“ (delete one „m“)

Line 96: „remaining“

Line 99: „sample“

Line 119: „It can be seen“

Abbreviations should be explained:

Line 87: „Rs“, Line 142: „SRBs“

General comments, Review evaluation:

In terms of innovative contents and originality the paper is of low quality. By consideration of the observational potential of the e-CALLISTO network a better and certainly valuable investigation is possible. In view of the above said the paper needs a major, strong and decisive revision and improvement. The referee is willing to re-evaluate the revised version.