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Author: Mr. Mohammad Baker Rihan

Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates,
mrihan@sharjah.ac.ae

Prof. Ilias Fernini

Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates,
ifernini@sharjah.ac.ae

Mr. Ismail Zein

University of Sharjah, United Arab Emirates, U20101379@sharjah.ac.ae

Mr. Abdullah Atoui

University of Sharjah, United Arab Emirates, U19100099@sharjah.ac.ae

Mr. Issam Abujami

Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates,
ijami@sharjah.ac.ae

Mr. Anas Adwan

University of Sharjah, United Arab Emirates, aadwan@sharjah.ac.ae

Prof. Hamid Al Naimiy

Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates,
alnaimiy@sharjah.ac.ae

BUILDING A SOLAR RADIO SPECTROMETER

Abstract

This paper describes a project that the radio astronomy lab has done at the Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST) to integrate solar radio astronomy research in the space weather awareness program. The project is the construction of a solar radio spectrometer, the first of its kind in the Middle East region. This system was built to receive frequencies ranging from 25.5 – 55.5 MHz by building a folded inverted V dipole two meters above the ground and using a software-defined radio dongle (SDR) as a receiver. This solar radio spectrometer will allow advanced studies of the solar radio emission within the upper high frequency (HF) band, where the terrestrial radio interference sources have their minimal values. The system's bandwidth is 30 MHz, giving researchers the ability to distinguish between the different types of radio bursts. Radio Sky Spectrograph is the software that monitors the received data as a dynamic spectrogram chart that contains all of the recorded radio signals, including its metadata. The solar radio spectrometer started to operate in December 2021, and the data analysis started soon after.