CURRICULUM VITAE- Duraid A. Al-Shakarchi

Department of Astronomy& Space, University of Baghdad
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Education

2014-2018 **PhD in Astrophysics/ Solar& Heliospheric Physics,** *Department of Physics, Aberystwyth University of Wales, United Kingdom.*
1995-1998 **M.Sc. in Space Physics**, *Al Mustansiriyah University, College of Science, Iraq.*
1987- 1991 **B.Sc. in Physics Science**, *Al Mustansiriyah University, College of Science, Iraq.*

PhD Thesis

Title: *A multi-spacecraft study of interacting ICMEs and CIRs in interplanetary space*
Supervisor: Dr. Huw Morgan

M.Sc. Thesis

Title: *A study of the solar activity & its effects on Earth's upper atmosphere*.
Supervisors: Dr. Amal AL Helo & Dr. K. Mouala

Experience

. Senior Lecturer at the Department of Astronomy & Space, University of Baghdad (2002-present).
. Work with the team on research at Aberystwyth University of Wales, Department of physics in a project titled EMPSOL: An empirical solution to space weather forecasting. This project is headed by Dr Huw Morgan (2020-present).
. A physicist researcher at the Iraqi Space Research Center for 10 years (1991-2001).
. Head of Solar activity and Ionosphere Dept. at the Iraqi space research center, for the Period (1999-2001).
. Work with team research in the fields of Solar-Terrestrial Physics, space weather, HF Radio Wave Propagation, headed by the late Dr. K. Mouala at space and upper atmosphere Dept, which is related to the Iraqi Space Research Center, for the period (1991-1995).
. Lecturer at Dept of Physics, College of Science, University of Baghdad for the years (2003- 2006).
. External Lecturer at Dept of Astronomy, College of Science, University of Baghdad for the years (1998-2000).
. External Lecturer at Dept of Meteorology, College of Science, Al Mustansiriyah University for the years (1998-2004).
. Participation in organization courses in the field of astrophysics, Solar-Terrestrial Physics, space weather, observing the sky, HF Radio wave propagation, and the

effects of solar activity on the Earth's upper atmosphere.

. I have workable practice in monitoring sunspots for ten continuous years for the Period (1991-2001) preparing periodical reports on their numbers and areas during this period.

. Member of the national team that monitored the phenomenon of the solar eclipse in Mosul city on August 11, 1999.

. Member of The Solar Wind Sherpas team, led by Dr. Shadia Habbal (Professor of solar and Faculty Chair of the University of Hawaii), which observed the March 20, 2015 total Solar Eclipse by the Irish Corps aircraft at a height of about 13000 feet over the Atlantic Ocean. https://svalbardeclipse2015.wordpress.com/2015-solar-wind-sherpa-members/

. participated in the Advanced Summer School in Solar System Physics 2016 (ASSSSP16) of science and technology Facilities Council (STFC) of the United Kingdom. http://sp2rc.group.shef.ac.uk/assssp16/

Teaching

. Introduction to solar- terrestrial physics.
. Fundamentals of astrophysics.
. Fundamentals of astronomy.
. Space weather
. English language for the postgraduate students.
. Supervision of undergraduate research projects.

Publications

Al-Shakarchi, D.A., Abd-Almajied, M.I. and Yaseen, M.M., 2025, August. Influence of Solar and Geomagnetic Activity on the Ionospheric Sporadic-E Layer Over Baghdad. In IOP Conference Series: Earth and Environmental Science (Vol. 1531, No. 1, p. 012002). IOP Publishing.

Al-Shakarchi, D.A. and Morgan, H., 2020. The compound stream event of March 20-25, 2011 as measured by the STEREO B spacecraft. *Astrophysics and Space Science*, *365*, pp.1-13.

Al-Shakarchi, D.A. and Morgan, H., 2018. Properties of the HPS-ICME-CIR Interaction Event of 9–10 September 2011. *Journal of Geophysical Research: Space Physics*, *123*(4), pp.2535-2556.

Al-Shakarchi, D.A.M., 2018. *A multi-spacecraft study of interacting ICMEs and CIRs in interplanetary space* (Doctoral dissertation, Aberystwyth University).

Yaseen, W.I., Al-Shakarchi, D.A. and Abed, A.K., 2026. Development of an acoustic vacuum gauge for low-pressure measurement. Applied Acoustics, 243, p.111127.

Yaseen, W.I. and Al-Shakarchi, D.A., 2024. Telescope Mirror Cleaning Using Atmospheric Pressure Multi-Channel Radio Frequency Plasma Jet. Iraqi Journal of Science, pp.3484-3491.

Yaseen, W.I., Ahmed, A.F., Al-Shakarchi, D.A. and Mutlak, F.A.H., 2022. Development of a high-power LC circuit for generating arc plasma and diagnostic via optical emission spectroscopy. Applied Physics A, 128(2), pp.1-9.

Al-Shakarchi, D.A. and Abd-Almajied, M.I., 2022. Response of The Ionospheric E-Region Critical Frequency and Virtual Height to the Solar Cycle 22 over Baghdad. Iraqi Journal of Science, pp.4576-4586.

Mohammed, D.A., Abdalmajied, M.I. and Ali, O.T., 2011. A Study of the Effects of the Solar Cycle 22, on the Critical Frequencies of F1 Layer over Baghdad. *Dirasat: Pure Sciences*, *37*(2),2010.

Mohammed, D.A., Statistical study of the Solar Cycle 22A study of two Models to predict the OWF of the HF Radio wave frequencies and their applications in IRAQ, JNUS Journal of Al Nahrain University- Science 13 (1), 31-43, 2010.

A study of solar activity and its effects on the Earth's upper atmosphere. (Master dissertation, Department of Physics, Al Mustansiriyah University, 1998).

Statistical study of the Solar Cycle 22, Statistical study of the Solar Cycle 22, The 1st Conference of Astronomy; Mosul, Iraq, 1999.

Conference presentations & Posters

Duraid Al-Shakarchi - Multi-spacecraft observations of Stream Interaction Regions (SIR). A cases study. National Astronomy Meeting 2025 (NAM2025), Durham University, 7–11 Jul 2025, UK. https://conference.astro.dur.ac.uk/event/7/contributions/193/.

Duraid Al-Shakarchi - The properties of a Co-Rotating Interaction Region and its interaction with interplanetary small magnetic flux ropes. National Astronomy Meeting 2023 (NAM2023), Cardiff University, 3rd - 7th July 2023, UK. https://www.youtube.com/watch?v=mUztw5T6khA&t=477s

Al-Shakarchi, D.A. and Morgan- The compound stream event of March 20-25, 2011, as measured by the STEREO B spacecraft, National Astronomy Meeting 2019 (NAM2019), UK. DOI: 10.13140/RG.2.2.11992.14081.

Al-Shakarchi D A, Study the effect of the short- term Solar activity on the Geomagnetic & Ionospheric storms over Baghdad, The 10th Arabic Conference on Astronomy and Space Sciences; Muscat, Oman, 2012.

Al-Shakarchi D A, Effects of the Solar Cycle 22 upon the F2 critical frequencies over Baghdad, The 10th Arabic Conference on Astronomy and Space Sciences; Muscat, Oman, 2012.

patent

"Design and construction of the Sonic Vacuum Gauge using sound frequencies"- Iraqi Central Agency for Standardization And Quality Control- Iraqi patent no. 7679- Date of Patent: December 26, 2022. E-mail: cosqc@cosqc.gov.iq
Inventors: Waleed Ibrahim Yaseen, Duraid A. Al-Shakarchi, and Aseel Kamil
International Patent no. G01L19/0092

Referees

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