

Video meteor spectroscopy

Bill Ward

William.ward@glasgow.ac.uk

Observational examples produced by the Kilwinning Spectroscopic Survey for Meteors are presented.

1 Introduction

The poster presented at the 2015 International Meteor Conference held in Mistelbach, Austria, illustrated some of the spectra obtained in the past year as part of the Kilwinning Spectroscopic Survey for Meteors.

2 Equipment

A variety of Watec cctv cameras are used at the observing station. The three primary cameras used for spectroscopy are two Watec 902H2 Ultimate and a Watec 910HX/RC.

These are fitted with 12mm f0.8 lenses carrying 600 groove/mm gratings.

Additional cameras are also used for general observing and determining out of field meteors as captured by the spectroscopy cameras. These are a Watec 902H2U and a Watec 910HX/RC.

3 Results

Operational Time

From April 2014 to April 2015 the cameras observed for a total of 714 hours. In this time 105 spectra were captured. Most of these were partial spectra, that is, some of the spectrum fell outside the field of view of the camera. However several complete and interesting spectra were obtained.

Examples

Figures 1 to 4 show some examples of complete images and spectra captured during the year.



Figure 1 – Sporadic Fireball #1.

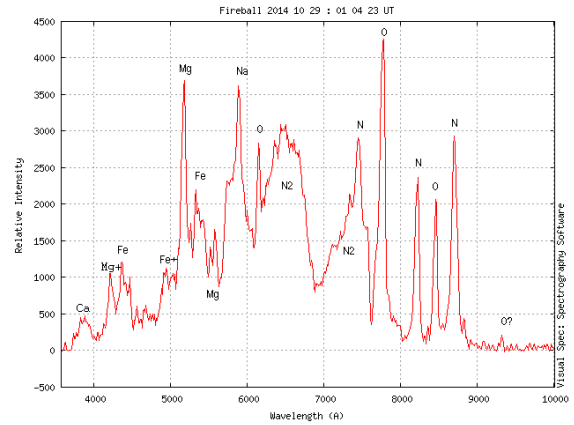


Figure 2 – Sporadic Fireball #1 Spectrum.



Figure 3 – Sporadic Fireball #2.

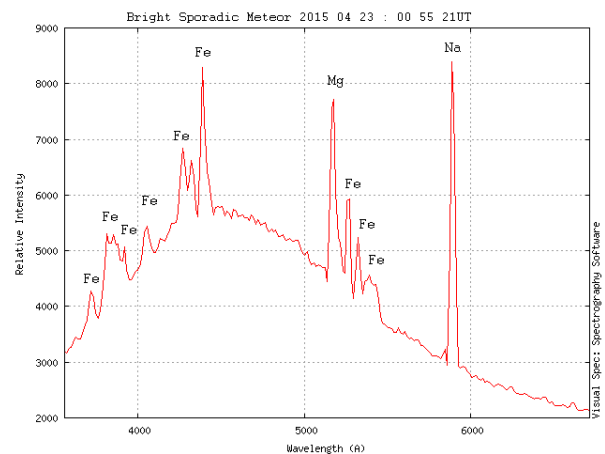


Figure 4 – Sporadic Fireball #2 Spectrum.

4 Dual station observations

Working with David Anderson of the Network for Meteor Triangulation and Orbit Determination

(NEMETODE)¹ dual station observations were conducted. This resulted in the capture of a bright fireball on the night of 10 April 2015 at 00^h58^m38^s UT. Analysis revealed an aphelion from within the asteroid belt and several bright emission lines from Magnesium, Sodium and Iron. This is illustrated in *Figures 5 and 6*.

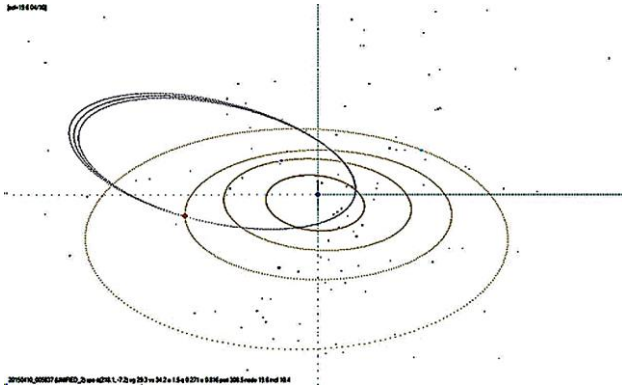


Figure 5 – 3D perspective orbit of dual station capture.

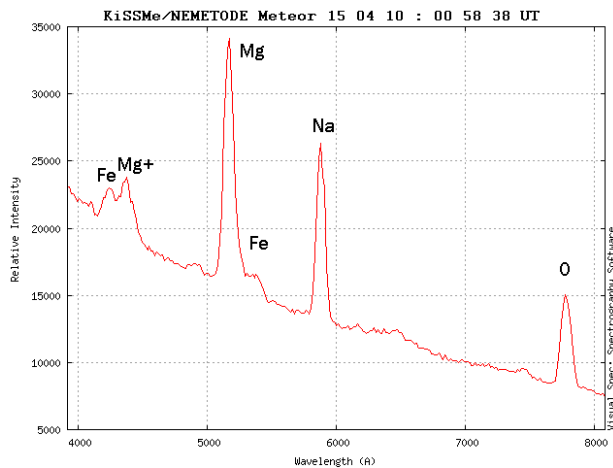


Figure 6 – Spectrum of dual station meteor.

5 Conclusion

The Kilwinning Spectroscopic Survey for Meteors produced 105 spectrums over the course of one year of operation with 714 hours of actual observational time.

Dual station observations were made in cooperation with David Anderson (Low Craighead Farm, Ayrshire) of the NEMETODE Group. These observations allowed the orbital and spectrum characteristics of a meteor to be determined. This is the first time that such an observation has been made from Scotland (UK).

Acknowledgment

The author would like to acknowledge the cooperation of, David Anderson of Low Craighead Farm, Ayrshire for his work in capturing the dual station meteor.

¹ NEMETODE Group. <http://www.nemetode.org>