Integrated System for Spectral Analysis of Lights of Unknown Origin.
Localisation: International Airport of San Carlos de Bariloche - Argentina - "OLD-TWR"

Identification and Caracterisation of Luminous Phenomena
through Spectroscopy

Introduction :

Over the years, several events related to unexplained luminous phenomena have been registered in the airspace of the city of San Carlos de Bariloche, in the Argentine Patagonia. The main features of those phenomena are lights of different colours, sizes and movements.

The people who witnessed those phenomena are professionals whose education and sociocultural level enable to identify the different types of existing aircraft, space debris, satellites and/or meteorites, and to differentiate them from unexplained phenomena. They are air-traffic controllers, pilots and ground staff belonging to the concessionaire of the international airport.

Similar phenomena may always occur again in the same place and, in order to be able to analyse them in real time, the IFA Foundation has developed a set of instruments called **Integrated System for Spectral Analysis of Anomalous Lights**, which will make it possible to get the spectral signature or print that is characteristic of luminous phenomena. Spectral signatures are related to the known chemical elements and to their different energy states, which can be identified through the analysis of the spectrum produced by the source of light. This is a non-invasive and quick procedure, as it is possible to get results after a few minutes.

The success of theses measures is subject to two factors :

- Intensity of the photon emission by the phenomenon.
- Duration.

Description of the working process

Detection of a phenomenon:

Photo 1: The system operator (user) must aim at the centre of the source of light, using the control graphical interface and the mouse (software V.07).
Photo 2: The user checks the correct collimation of light into the centre of the optical fibre of the spectroscope.
 Photo 3: The user sees and captures the light spectrum, and he sets up the integration time, according to the incoming signal (software V.3.1.017). Spectral range: 350 à 1000 Nm, resolution : 0.5/0.7 Nm.
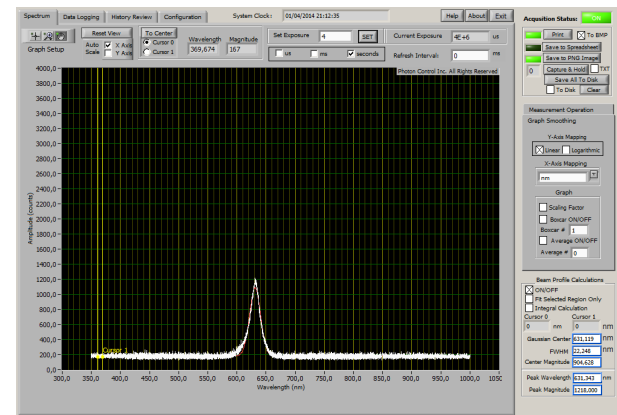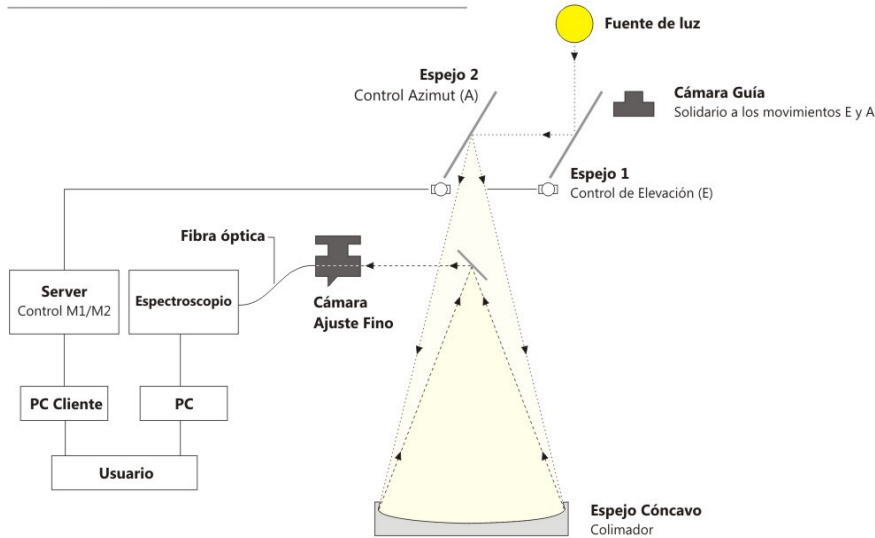

Photo 1

Photo 2

Photo 3

Sistema Integrado de Análisis Espectral de luces anómalas
Esquema simplificado

Integrated System for Spectral Analysis of Anomalous Lights
Simplified diagram

Fuente de luz = Source of light
Espejo 2 = Mirror 2
Control Azimut (A) = Azimuth Control (A)
Cámara Guía = Guiding Camera
Solidario a los movimientos E y A = Connected to E and A movements
Espejo 1 = Mirror 1
Control de Elevación E = Raising Control E
Fibra óptica = Optical Fibre
Server = Server
Control M1, M2 = Control M1, M2
Espectroscopio = Spectroscope
Cámara Ajuste Fino = Fine Adjusment Camera
PC Cliente = Client PC
PC = PC
Usuario = User
Espejo Cóncavo = Concave Mirror
Colimador = Collimator