Konrad Guhl (IOTA/ES)

A portable 20“ telescope for IOTA/ES

Abstract: The observational work of IOTA is spread out observation sites around the world. Due to focusing on occultation astronomy of TNO’s and moons of the outer planets, the sizes of necessary telescopes have increased over the years. The standard “traveling observatory” for many years – the C8 telescope (8 inch diameter) doesn’t fit the requirements of these observations any more. The signal to noise ratio of these rather small instruments cannot keep up with faint objects (up to 20th magnitude), even if highly sensitive CCD (or EMCCD) cameras are used for detection. An instrument with a diameter of 20” would solve this problem: on a dark observation site, with an exposure time of 1 second, an instrument of this size is able to detect occultation of stars fainter than 18th magnitude.
Therefore, IOTA/ES decided to buy a used 20” Dobson telescope in order to adapt it to the requirements of occultation work. An instrument of this size balances research capability and transportability well. The presentation will show the different stages of the project and the instrument in the final design. The first presentation about the instrument was given at ESOP XXXIII in Prague (2014). Within the last two years, the telescope was finished and improved. A first expedition was undertaken to the Alps for an occultation of a star by Pluto on July 19, 2016.
The instrument will be based in Hannover (Germany, headquarter of IOTA/ES) and will be available for IOTA/ES members on request.

how it starts:

The telescope presented to the IOTO/ES member on the anual meeting 2013 April.

Plan for the first observation:

2013 May 28

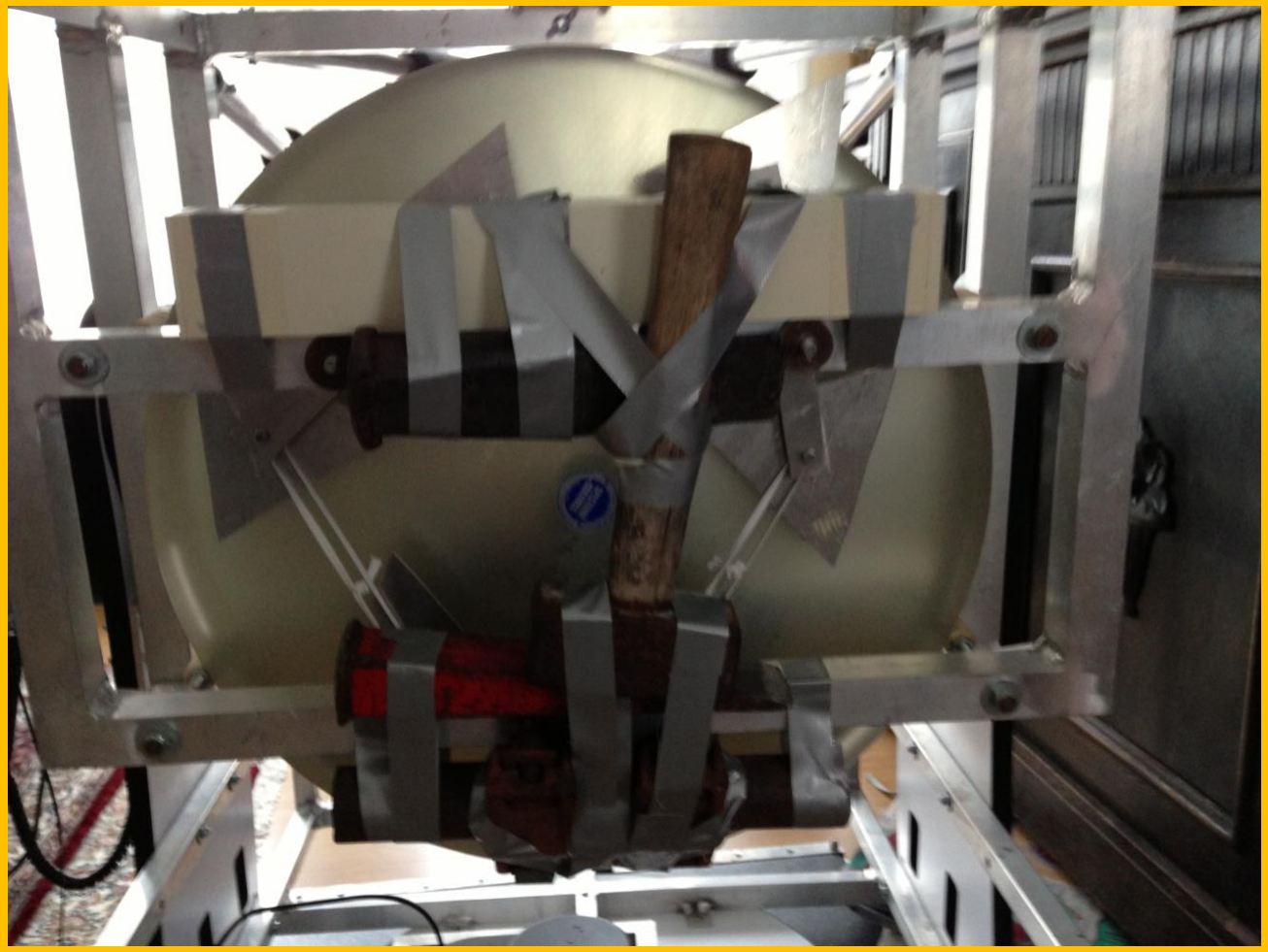
Uranus occults a star in southern Italy

Transport in a car

Hannover – Marwitz and tests in Marwitz and Comthurey

Tests of moving → weight and Balance is not o.k.

→Urgent call to Michael Busse



First aid:

A new tubus:

We learned:
- Ballance is not all
-Visual view is not a must
- optimism is all

On May 18 ready for May 28

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- Ballance is not all
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On May 18 ready for May 28

Travelling to Lecce but break of due to heavy rain

After so much bad experience

General re-design by Micheal Busse.

Some reason for delay…

A new goal → PLUTO

Status March 2016 → (again problem with ballance)

New mirror carrier was used as center of weight

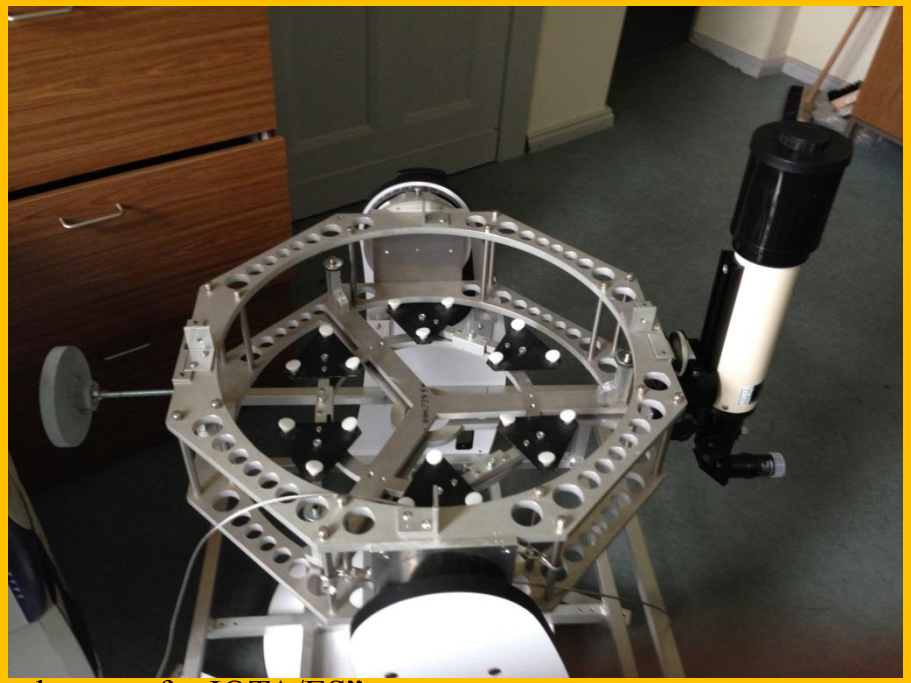
Test the balance !

Head too heavy
2.5 kg !

→ Shift mirror (29kg) for 250mm to have the fork arms on the ballance point

Shift the mirror
250mm

Finding telescope out of center
→ Counterbalance



June 2

Guhl 2014 "a portable 20" telescope for IOTA/ES”

First light
June 6

Moving balance weight on tube n.o.k.

The second father:
Michael Dohrmann

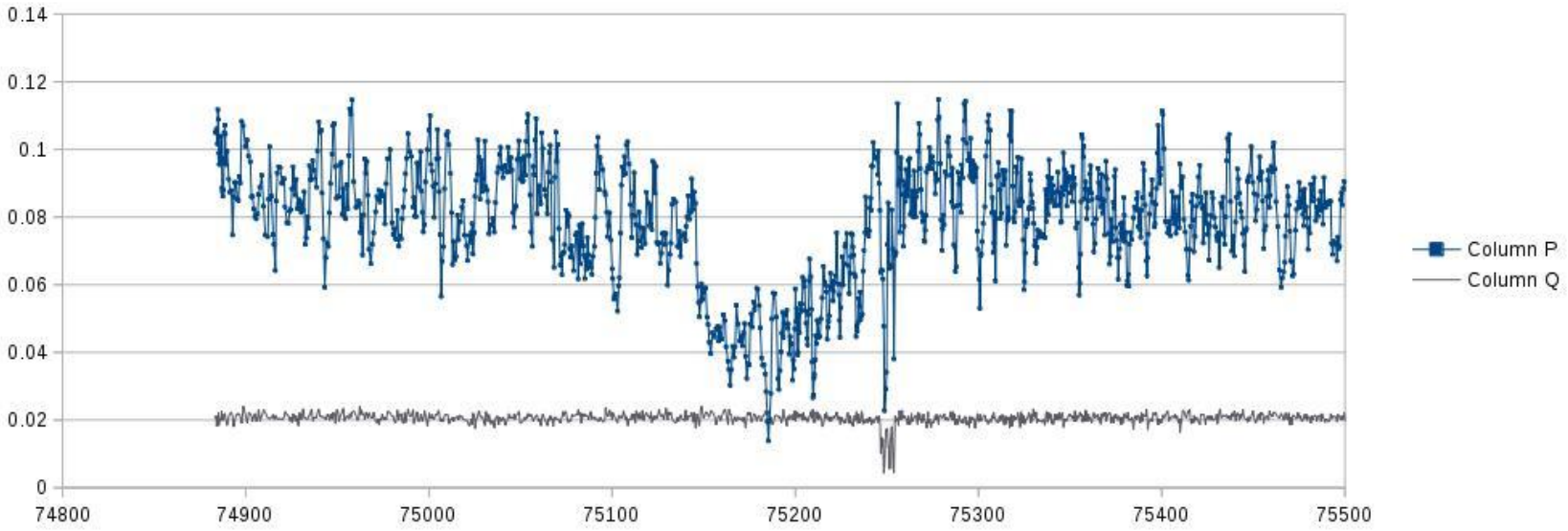
second test night
June 23

Start July 17

900 km south

Guhl 2014 "a portable 20" telescope for IOTA/ES"

Occultation of UCAC4 345-180315
observed with the 500mm portable occultation telescope



After the first real observation under expedition conditions

- cowling against light
- stabilizing the forc arms
- don‘t make alignment over the whole sky
- anti-reflection
- surface
- create some boxes for air transportation
- we will held a training afternoon in Berlin in autumn 2017

Some telescopes do have a name.

We learned the telecope has two father, Michael Busse and Michael Dohrmann.

So lets call is „M^2“ !

Thanks !