ASTROMETRY
Theta & Rho

BRIEF

Overview

Stars are measured/studied via two primary methods: Astrometry and Photometry

Astrometry (the focus here):

Measures a star's, or another celestial object's, position in the sky and its movement. Think of it as finding the Latitude/Longitude of a place on earth. You are finding the position of an object in the night sky.

Photometry:

Measures a star's, or another celestial object's, flux (light output). This technique focuses on light capturing, changes, output, etc.

Theta & Rho

- *THETA (a.k.a. Position angle)* (PA, θ) is measured in counterclockwise degrees from the line to celestial north
- *RHO (a.k.a. Separation)* (Sep., ρ) is angular distance between two objects in arcseconds
    - 1 arcsecond = 1/3600º ... the visual width of a golf ball at 5½ miles)
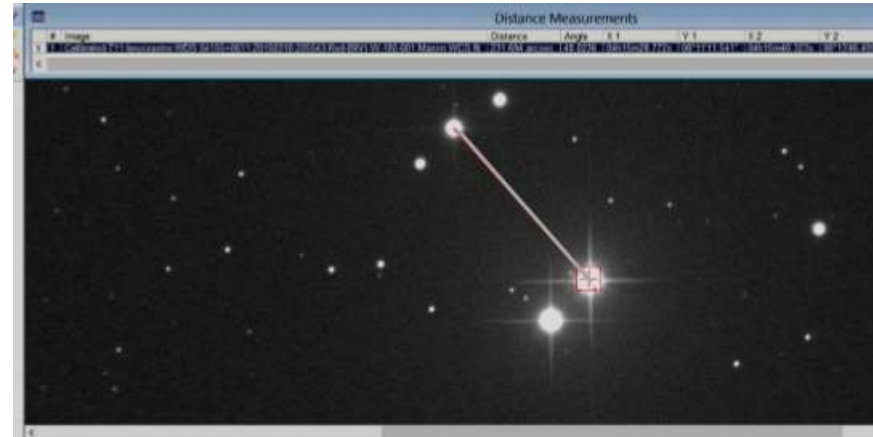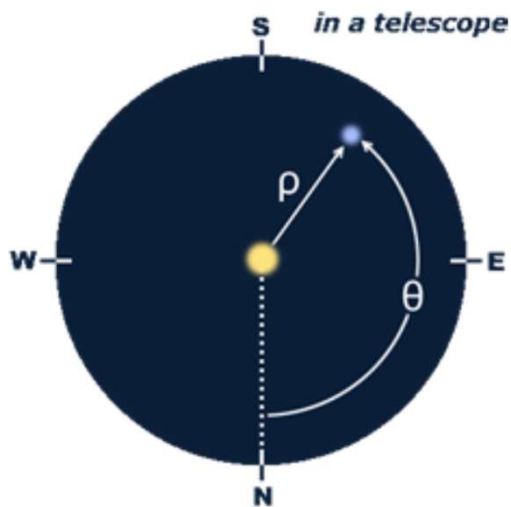
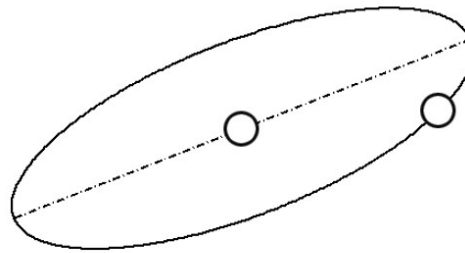| Pair	Obs. History			Separation (″)			Position Angle (°)		
	#	First	Last	First	Last	2015	First	Last	2015
STTA 45 AB	37	1875	2012	65.47	64	64.3	314.8	315.9	315.069
H 6 98 AC	13	1885	2011	213.3	234.42	233.01	47.4	47.7	48.09
H 6 98 CD	11	1897	2012	51.669	55.63	55.82	317.5	314.6	314.55
STU 18 CE	9	1961	2012	57.249	61.39	61.91	144.8	149.4	149.28

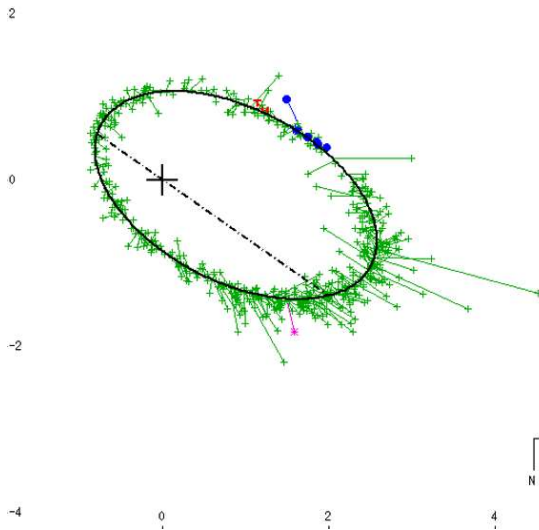B R I E F

Theta & Rho: In Application

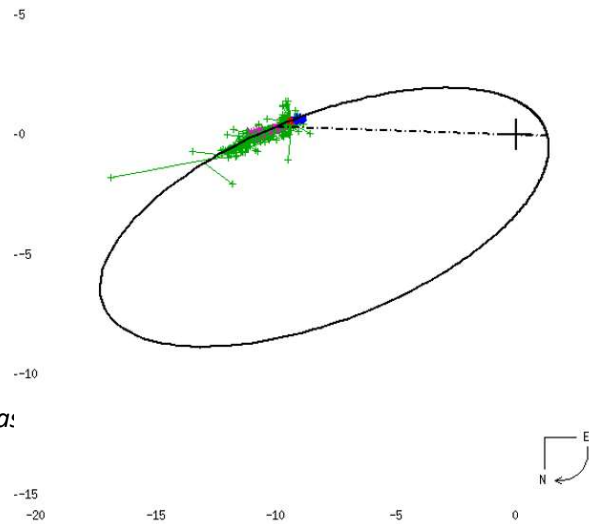WDS 11239+1032   STF1536AB   (Sod1999)

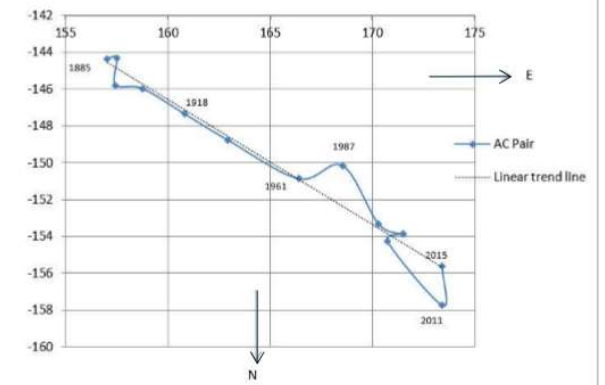**Type 4 – STF 1536 (iot Leo)**
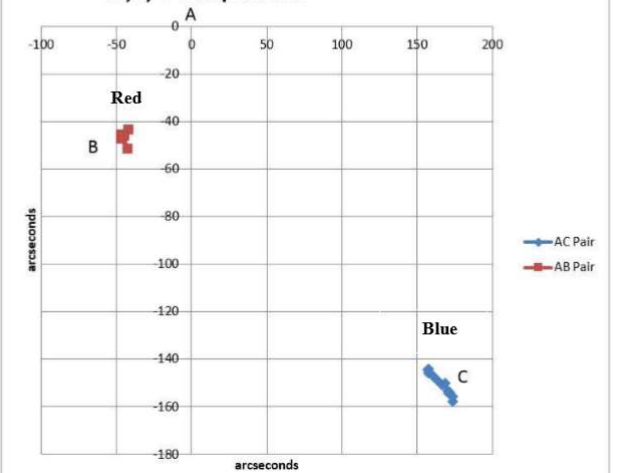

WDS 20467+1607   STF2727   (Hle1994)

Type 6 – STF 2727 (gam Del)
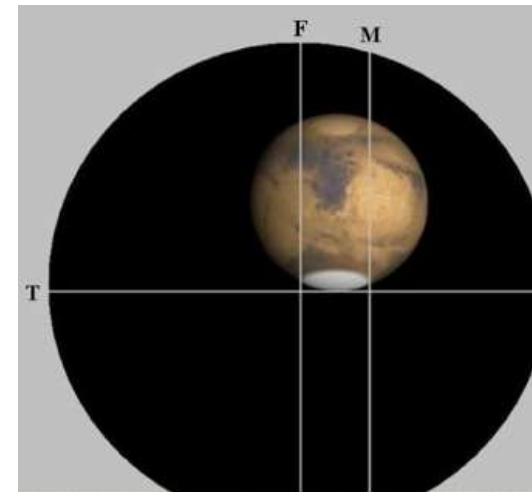

C position with A at center (0,0) in arcseconds

A,B, C components

Methods of Astrometric Measurements: Micrometers
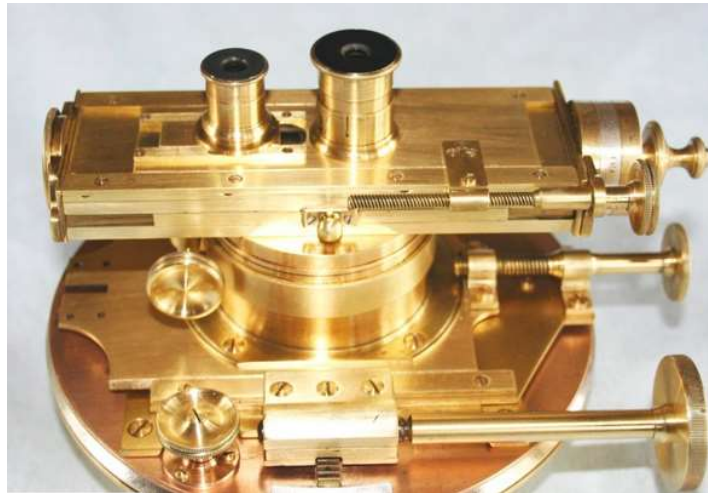
Astrometric Eyepiece

2.8 units
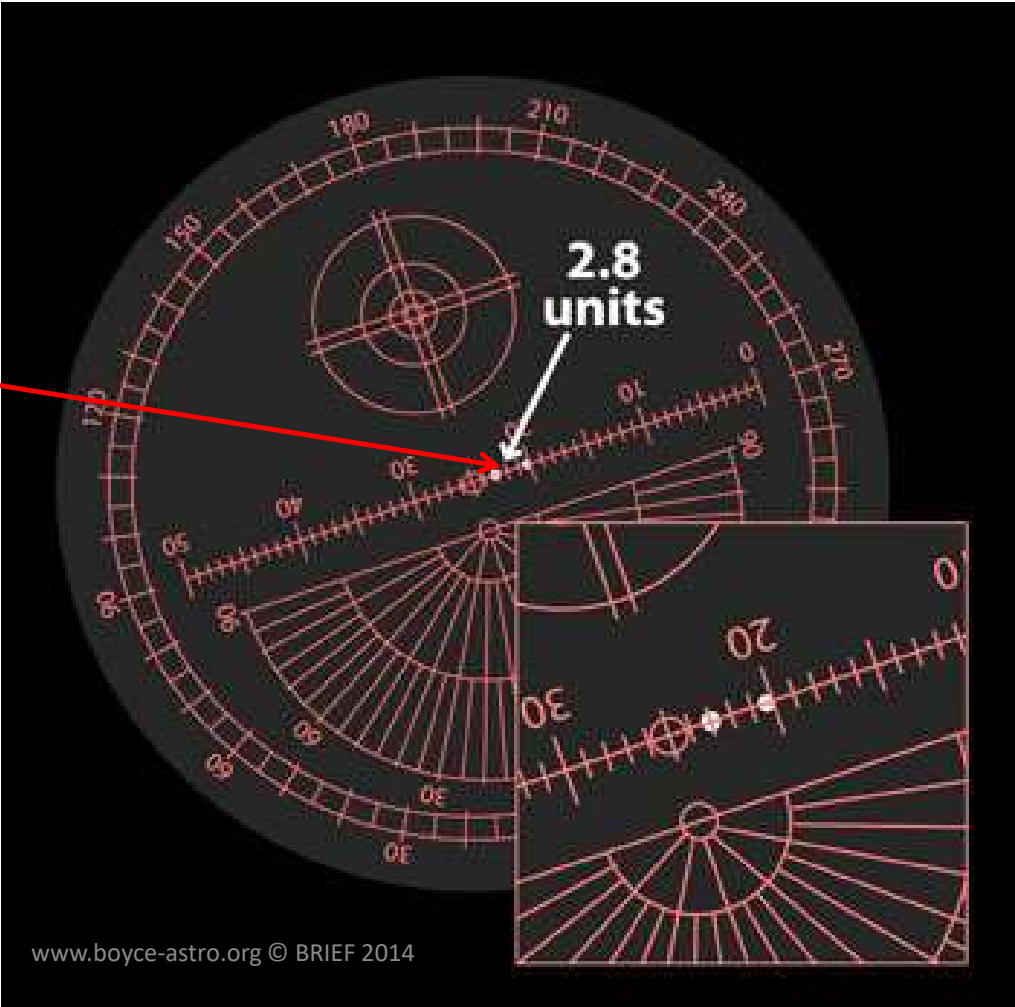
Table 1 - Summary of Three (3) Neglected Double Stars Observations

RA+DEC	Discoverer	THETA	RHO	Date	RA	DEC	N	Remarks
20065+3302	GYL 23	179	13.3	2013.741	20 06 30	33 02 00	1	NOT SEI879
20299+4022	HJ1525AB	238	8.9	2013.741	20 29 54	40 22 01	1	NOT STN 50
20299+4022	HJ1525AC	41	18.0	2013.741	20 29 54	40 22 01	1	NOT STN 50
21378+3739	SEI1527	330	25.3	2013.741	21 37 48	37 39 00	1	AB COMPONENTS
21378+3739	<NEW>	90	13.6	2013.741	21 37 48	37 39 00	1	NEW COMPONENT
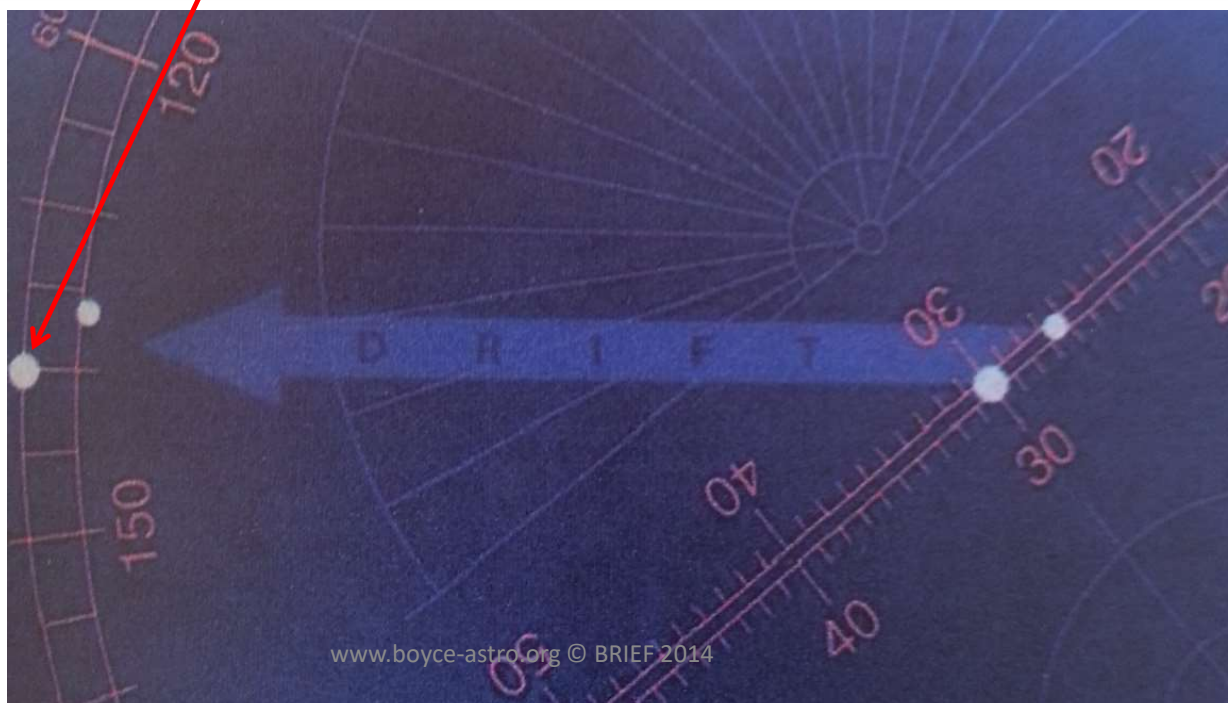
Today's Measurements of Theta and Rho
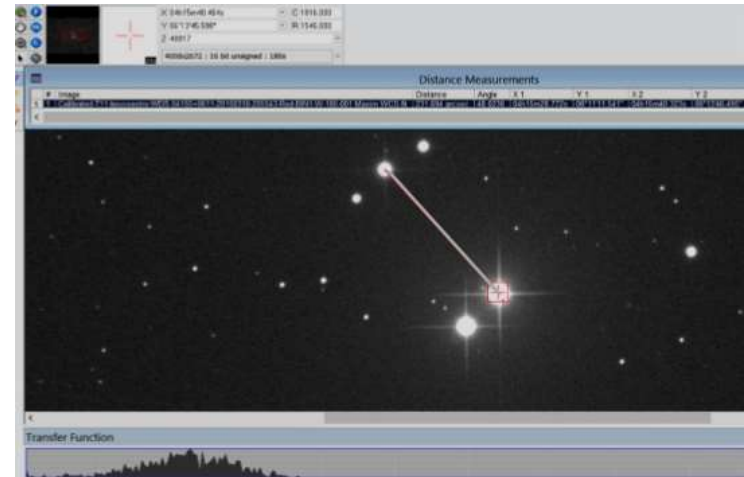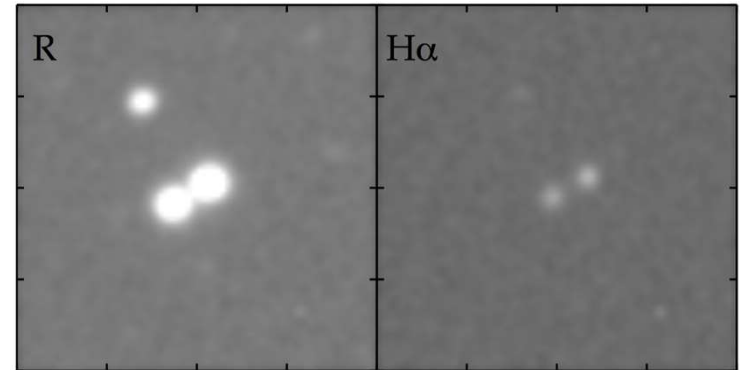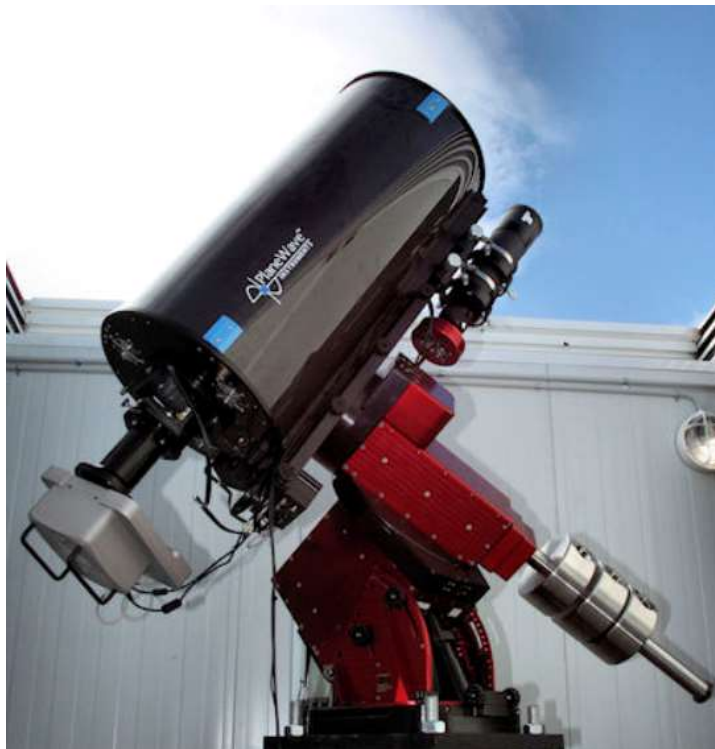
Summary

Theta & Rho are the position angle, measured from North, and separation of two objects.

These are most common in the science of Double Star observations.

While other tools used to be employed for this, we now measure WCS coordinated images with software tools such as MIRA and AIJ.

Questions?