Observation Round: Procedure

You have 30 minutes to read the questions and plan your observations. Do not talk to other participants. When you are shown the sign to 'GO NOW' by the supervisor, follow the directions to the telescope location taking with you the questions, clipboard and pen/pencil (a red light will be provided at the telescope). Keep your distance from other participants and do not talk to them. Show your badge and code to the assistant at your telescope.

You will have a total of 30 minutes to complete the observing tasks, starting when all participants are ready. At the end of 30 minutes take your papers and clipboard (leave the light) and wait until called to leave the observing location.

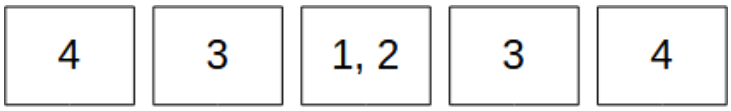
Follow the directions back to the preparation hall. Keep your distance from other participants and do not talk to them.

You will have another 30 minutes to process your observations and complete the answer sheet (there will be a calculator, geometrical instruments etc.). If you had any technical problems you can write a report for your team leader on the form in the answer sheets. At the end of 30 minutes place your answer sheets and the report in the envelope and wait at your desk until directed to leave the hall.

Observation Round: General Instructions

Scientists have discovered a crashed alien flying saucer. High up inside the hold, they found several screens transmitting views of the sky and telescopes have been set up to let you see them clearly from the level of the deck. Use your telescope to observe the (simulated) targets on the screens and record your results.

There are 5 screens on the opposite side: the central one will display video for tasks 1 and 2, the other four will display static images for tasks 3 and 4. The two screens closer to the centre will display the (same) image for task 3, and the two outer screens will display the (same) image for task 4. Point your telescope at the screens furthest away from you.



You will have a total of 30 minutes to complete the observing tasks, however tasks 1 and 2 will only be displayed once: just as with real observations you will only have one opportunity to collect the data. There will be two clocks visible showing the time remaining in the round.

At the start of the round a clock on the central screen will show the simulated time at the observer's location. The clock will have the correct orientation when seen through the telescope. The time will be shown for 3 minutes after which it will disappear; use this to set a start time for your observations.

Caution: the scale of the field of view is different between the video and still images.

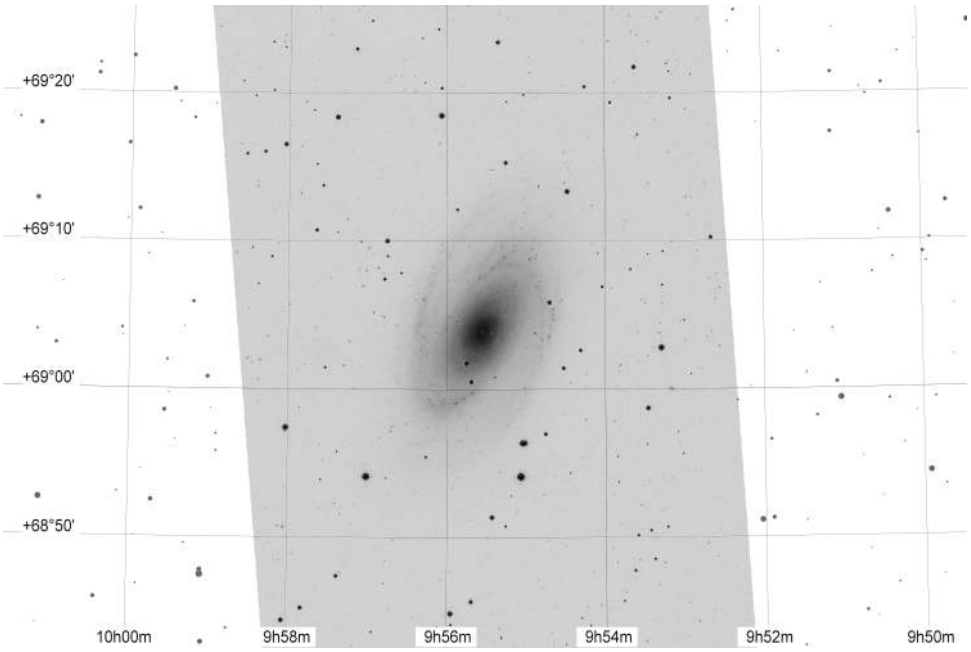
Observation 4: 'Supernova'

The other screen presents the view of a galaxy and a bright (mag < 11) object which was not visible previously. Estimate the right ascension (RA) and declination (DEC) coordinates of this star and estimate its magnitude. You may use Map 2, with stellar coordinates and a list of magnitudes.

(10 points)

Star	RA J2000			DEC J2000			mag
	h	m	s	deg	m	s	
BD+69 541	9	55	2.7	68	56	22	10.3715
Gaia DR2 1070097015969362560	9	53	27.9	68	58	43	11.2281
Gaia DR2 1070144329329069568	9	53	17.7	69	2	48	10.078
Gaia DR2 1070453463896461952	9	57	0.8	68	54	6	8.9148
Gaia DR2 1070455010084791680	9	55	25.9	68	51	21	11.4722
Gaia DR2 1070459408131195776	9	58	1.6	68	57	24	10.2003
Gaia DR2 1070467070352960512	9	55	4.4	68	54	5	9.1615
Gaia DR2 1070467379590606976	9	55	1	68	56	22	10.4605
Gaia DR2 1070468169864590208	9	54	45.3	68	56	59	12.2097
Gaia DR2 1070469475534553728	9	55	41.4	69	0	30	11.7856
Gaia DR2 1070470265808536448	9	55	45	69	1	46	11.2905
Gaia DR2 1070470609404512512	9	55	33.2	69	3	55	13.3020
Gaia DR2 1070472293033168640	9	54	53.2	69	3	48	14.2845
Gaia DR2 1070473186386370176	9	54	42.3	69	5	52	11.6033
Gaia DR2 1070476794158817152	9	57	38.8	69	10	44	12.6348
Gaia DR2 1070476858581360384	9	56	47.1	69	7	27	12.7259
Gaia DR2 1070476897238038272	9	56	34.4	69	7	51	13.6578
Gaia DR2 1070477240835421440	9	56	44.8	69	9	1	13.7626
Gaia DR2 1070477305257957888	9	56	45.1	69	10	1	11.4495
Gaia DR2 1070522934990509312	9	55	15.4	69	15	19	12.0436
Gaia DR2 1070523111086221568	9	54	28.6	69	13	22	11.0704
HD85458	9	55	4	68	54	6	9.1615




+69°20'
+69°10'
+69°00'
+68°50'
10h00m
9h58m
9h56m
9h54m
9h52m
9h50m

Answer Sheet

Right ascension	Declination	est. magnitude

Solution

Right ascension	Declination	est. magnitude
$9^{\mathrm{h}}\ 55^{\mathrm{m}}\ 54^{\mathrm{s}}$	$+69°\ 09'\ 11''$	10.2 mag

1. Declination:
   (a) $< \pm 1.5' \implies$ 4 points
   (b) $\leq \pm 3' \implies$ 2 points
   (c) $> \pm 3' \implies$ 0 points
2. Right ascension:
   (a) $< \pm$ 22.5 s $\implies$ 4 points
   (b) $\leq \pm$ 45 s $\implies$ 2 points
   (c) $> \pm$ 45 s $\implies$ 0 points
3. Magnitude:
   (a) $< \pm$ 0.4 mag $\implies$ 2 points
   (b) $\leq \pm$ 0.8 mag $\implies$ 1 points
   (c) $> \pm$ 0.8 mag $\implies$ 0 points