SEA NEWS

The News Letter of the Space Engineers Association

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VIKRAM SARABHAI MEMORIAL LECTURE 2022

Space Engineers Association's flagship event, the Vikram Sarabhai Memorial Lecture was held on 12th August 2022 at Priyadarshini Auditorium, jointly organized with Kerala State Science & Technology museum, Kerala.

Dr. A E Muthunayagam was the speaker, who had long association with Dr. Sarabhai.

Dr. AEM started with his interview at Indian Embassy at Washington, USA, by Dr. Sarabhai and his being selected along with others like Dr. Y J Rao, Dr. Mukherjee etc.

After joining at Trivandrum, at the Church building, he was assigned the task of development of Propulsion systems. He explained the formation of various divisions. Dr. Sarabhai created TCFC, an apex body for the activities, since he could come only once a month to Trivandrum. Dr. AEM narrated the enthusiasm amongst the divisions/ people to present to Dr. Sarabhai the products developed and getting approval for further action.

Dr. AEM gave examples of Dr. Sarabhai in taking quick decisions, and providing solutions, both technical and administrative.

Dr. Sarabhai had enormous influence in Govt. as well as PVT industries. Specifically he dealt in detail about the collaboration with CORDRARITE factory, Aravancode for the propellant needed for RH 75.

Dr. AEM went on to describe the evolution of divisions, groups and finally, LPSC, of which he became the Founding Director. He also touched upon his role in Ocean Technology and concluding about his book, which was released last month. A copy of the book was given to the SEA for the benefit of members.

On the whole, it was a talk filled with ISRO's progress from RH 75 to GSLV MK 3., based on the vision of Dr. Sarabhai. A memento was presented to Dr. A.E. Muthunayagam by Dr. Narayanan, present Director of LPSC.

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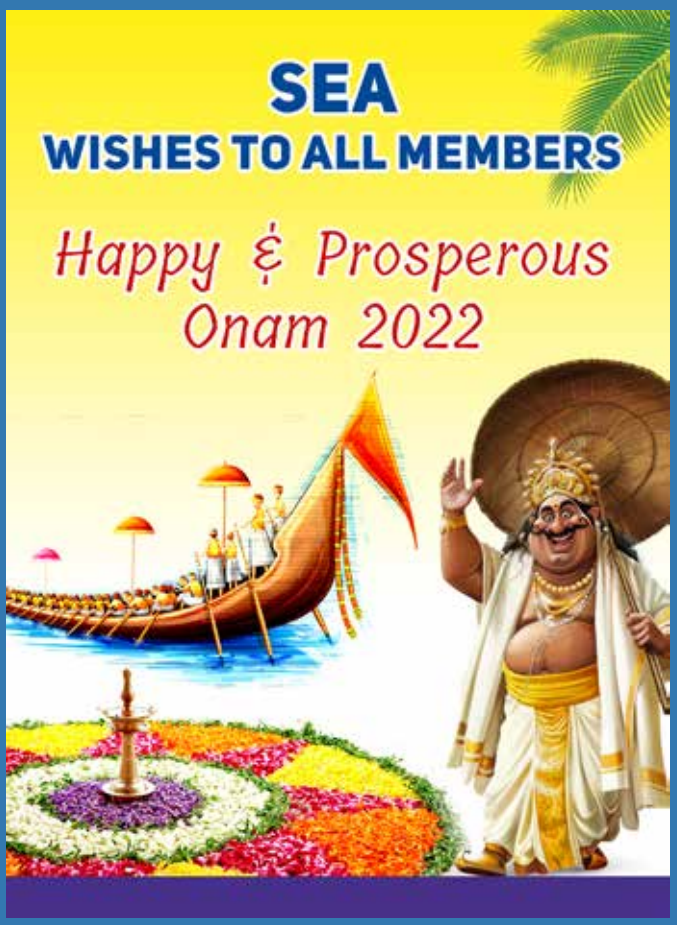
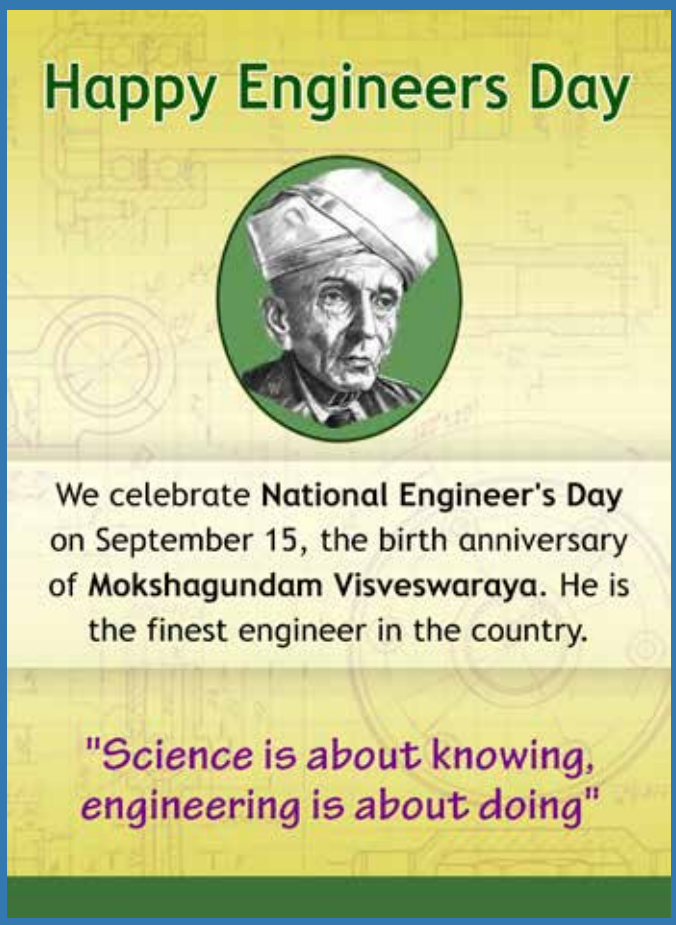

SEA
WISHES TO ALL MEMBERS
Happy & Prosperous
Onam 2022


Happy Engineers Day
We celebrate National Engineer's Day on September 15, the birth anniversary of Mokshagundam Visveswaraya. He is the finest engineer in the country.
"Science is about knowing, engineering is about doing"

Superannuation

MARCH 2022

Sri. Mohanan Chettiar V
VSSC

Sri. Shanmughanathan D
VSSC

Sri. Sundararajan T
VSSC

Sri. Thimothy Francis C

APRIL 2022

Sri. Aliyas A V
VSSC

Sri. Chellathurai B
IPRC

Sri. Krishnadasan C K
VSSC

Sri. Reuben Soloman George
IPRC

Sri. Roy P Varghese
VSSC

Sri. Sebastian P C
VSSC

Sri. Sridhar S
VSSC

Superannuation

MAY 2022

Sri. Ajaya Kumar S
LPSC

Sri. Anila V
IISU

Sri. Bagavathiyappan R
VSSC

Smt. Geetha Dinesh A
VSSC

Smt. Geetha S
VSSC

Sri. George V Varghese
IISU

Sri. Gopal M S
IISU

Sri. John Binoy Joseph
VSSC

Sri. Mukundan K K
VSSC

Sri. Sabapathy T M
LPSC

Superannuation

JUNE 2022

Sri. Alaguvelu K
IPRC

Sri. Baby Abraham
VSSC

Sri. Devanand N S
VSSC

Sri. Elanchezhiyan T
VSSC

Sri. Kamatchi K
LPSC

Sri. Pradeep N
VSSC

Sri. Venkata Ramana B
IISU

JULY 2022

Sri. ANAND B IISU

Sri. HARIKUMAR G VSSC

Sri. HEMANT KUMAR JHA VSSC

Sri. JAMES K GEORGE
VSSC

Superannuation

JULY 2022 *(contd.)*

Sri. Jeenu R
VSSC

Sri. Jegan Lal G
LPSC

Sri. Manoharan N
IPRC

Sri. Mohanan Pillai B
VSSC

Sri. Narayanan Namboodiripad M VSSC

Sri. Radhakrishnan Thaliyil Veedu VSSC

Sri. Ramesh Narayanan P
VSSC

Smt. Sainumole B
VSSC

Sri. Saji K Sam
IISU

Sri. Shaji V P
LPSC

Smt. Sheelu Jose
VSSC

Sri. Subramonia Pillai N
IPRC

Sri. Suresh Babu J
VSSC

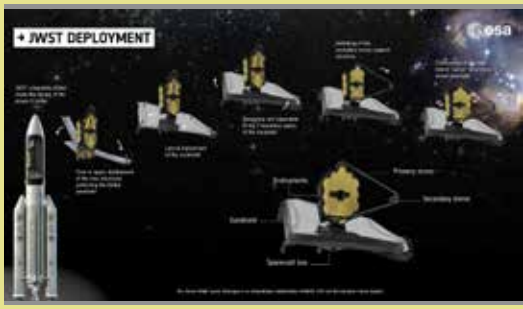
Sri. Thomas Abraham
VSSC

AUGUST 2022

Sri. Sreekumar P K
VSSC

The James Webb Space Telescope: Mission Overview


The James Webb Space Telescope mission



The science motivation for the JWST mission was developed by a succession of international science working groups. This science case forms the basis from which detailed science and mission requirements were derived to guide engineering design and development of the JWST as a research tool. The science observations that are actually implemented by the JWST will be proposed by the international astronomical community in response to annual peer reviewed proposal opportunities.

The emergence of the first sources of light in the universe marks the end of the "Dark Ages" in cosmic history. The ultraviolet radiation field produced by these sources created the ionization that is observed in the local intergalactic medium (IGM). The JWST design provides unique capability to address key questions about this era in cosmic evolution including: what is the nature of the first galaxies; how and when did ionization of the space between them occur; and what sources caused the ionization? The JWST architecture is primarily shaped by requirements associated with answering the above questions.

In contrast to the Hubble Space Telescope (HST), the JWST is designed as an infrared optimized telescope to observe the redshifted visible and ultraviolet radiation from the first galaxies and supernovae of the first stars. Finally, the resulting large deployable cryogenic telescope must achieve HST-like angular resolution, but at a 4X longer wavelength thus, also necessitating a large diameter telescope aperture. The major observatory design features trace directly from these requirements and differ markedly from those of the HST.

The JWST science instrument payload is designed to probe the first galaxies with high angular resolution near- infrared image surveys in broad-band filters. This capability enables identification of primeval galaxies by searching for their Lyman continuum break with multi-filter photometry. This prominent feature occurs in the near-infrared (1.3 – 2.6 um) for galaxies with redshifts in the range of 10 – 20. This broad-band technique exploits the maximum sensitivity of the observatory, such that the space density of galaxies can be probed to z~20. JWST high angular resolution imagery across the 0.6 – 29 um spectrum will probe the assembly and evolution of galaxy morphologies to enable observation of when and how the Hubble sequence formed.

The JWST is designed to enable near-infrared multi-object spectroscopy of thousands of galaxies at several spectral resolutions (~102, ~103). This capability will probe the chemical evolution and metallicity of galaxies and the ionization state of the IGM across cosmic time. Low resolution multi-object spectroscopy will enable calibration of photometric redshifts for primeval galaxy studies. The JWST spectrometers include integral field capability over the 0.6 – 29 um spectrum that will enable detailed spectral, morphological, and kinematic studies of high redshift galaxies and local galaxy nuclei. JWST spectroscopy includes wide field slitless grisim spectroscopy to enable high redshift emission line galaxy surveys and spectroscopy of extrasolar planet atmospheres.

The JWST observatory design enables wide discovery potential beyond cosmology and galaxy

studies. The JWST high angular resolution imagery and imaging spectroscopy across the 0.6 – 29 um spectrum will open a new window on observation of star formation in our own galaxy to reveal: how molecular clouds collapse; how environment effects star formation and vice-versa; the mass distribution of low mass stars; and the relationship between stellar debris disks and the formation of terrestrial planets.

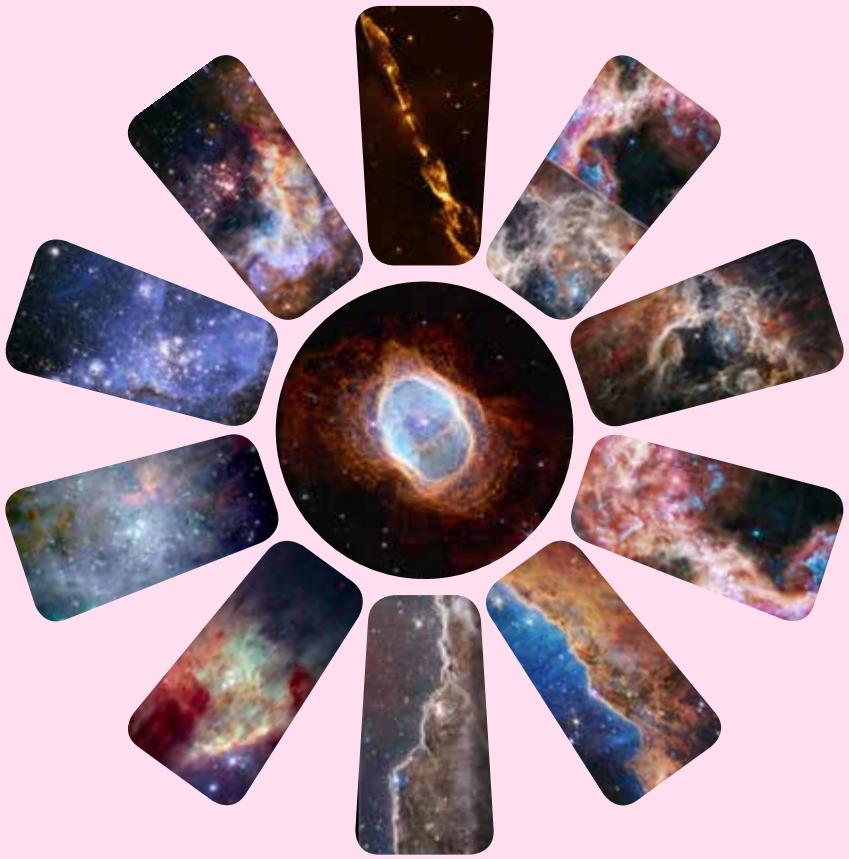
The JWST instruments include coronographic imagery, sparse aperture interferometry, and spectroscopy capability that will enable a wide range of stellar debris disk studies and extra-solar planet observations at high angular resolution. High dynamic range modes of the JWST instruments will enable extra-solar planet transit photometry and spectroscopy across the above wavelength range. The JWST observatory enables non-sidereal tracking so that the full observatory capability can be used observe the outer solar system to enable comparative studies between stellar debris disks, extrasolar planets, and our own solar system.

Unlike the Hubble Space telescope, which resides in low earth orbit, the JWST cannot be serviced by astronauts due to its more distant Sun-Earth L2 point orbit. However, in contrast to prior space observatories, the JWST telescope and instrument optical systems employ a high degree of capability for in-flight adjustment.

Launch Profile

NASA's James Webb Space Telescope is an infrared space observatory launched on Dec 25, 2021, from ESA's launch site at Kourou in French Guiana, at 1220 GMT; 9:20 a.m. local time in Kourou, aboard an Ariane 5 rocket. The $10 billion James Webb Space Telescope - NASA's largest and most powerful space science telescope - will probe the cosmos to uncover the history of the universe from Big Bang to alien planet formation and beyond. It is one of NASA's Great Observatories, huge space instruments that include the likes of the Hubble Space Telescope to peer deep into the cosmos. Primary mirror size: 21.3 feet (6.5 meters) across; Sunshield: 69.5 ft by 46.5 ft (22 meters x 12 meters); Mass: 14,300 lbs (6,500 kg). It took 30 days for the James Webb Space Telescope to travel nearly a million miles (1.5 million kilometers) to its permanent home: a Lagrange point - a gravitationally stable location in space. The telescope arrived at L2, the second Sun-Earth Lagrange point on Jan. 24, 2022. L2 is a spot in space near Earth that lies opposite from the Sun; this orbit will allow the telescope to stay in line with Earth as it orbits the sun. According to NASA, the James Webb Space Telescope will focus on four main areas: first light in the universe, assembly of galaxies in the early universe, birth of stars and proto-planetary systemsand planets.

Nebula images taken by JWST



Space Engineers Association-SEA welcomes following NEW MEMBERS

		NAME	DIVISION	GROUP	ENTITY	AREA	CENTRE
13980	202213980	NARAYANASWAMY M	QCD	QMPG	MVIT	VMC	VSSC
11699	202211699	GEMI RACHEL GEORGE	FCD	FCG	AVN	VRC	VSSC
12291	202212291	SUJO JOSEPH K	SSID	SEIG	MVIT	TERLS	VSSC
36908	202236908	SAJEEV R K	SED	SDEG	STR	VRC	VSSC
21291	202221291	DEEPAK B P	SED	SDEG	STR	VRC	VSSC
14056	202214056	NATARAJAN R	CMID	LMIG	MVIT	VMC	VSSC
13999	202213999	NIRANJAN KUMAR	QCD	QMPG	MVIT	VMC	VSSC
13457	202213457	MANOJ MS	QCD	QMPG	MVIT	VMC	VSSC
30085	202230085	ARUN K.	CLID	SEIG	MVIT	TERLS	VSSC
30396	202230396	APURBA ROY	MPA	MMA	MME	RFF	VSSC
36327	202236327	SASIKUMAR P V	SLPD	ISMG	ASOE	TERLS	VSSC
62499	202262499	MANU JOSEPH	QCI	QCNG	SRQA	VMC	LPSC
61229	202261229	GAURAV SHARMA	RDD	CRDG	CSC	VMC	LPSC
16046	202216046	AWANEESH CHANDRA PANDEY	MDD	CSVUG	CSC	VMC	LPSC
63686	202263686	SREEKUMAR S. V.	IPAST	CSPG	CSC	VMC	LPSC
10150	202210150	ASIR NESA DASS N.	ISDTF	SDTG	STR	TERLS	VSSC
36598	202236598	SHAIK MUJEEB	SPCL	SPCG	SPRE	TERLS	VSSC
36640	202236640	SANKARANARAYAN R.	CMD-ELE	CMG	ADIR	VRC	VSSC
38031	202238031	VAISAKH LAL V. C.	ISMP	MDPG	ISPE	VKC	IISU
38049	202238049	VIJEESH KUMAR S.	NSID	NSG	LVIS	VKC	IISU
15423	202215423	RAUSHAN KUMAR	SAS		GSLV	70 ACRE	VSSC
HS00094	202200094	SHACHINDRA NATH SHARMA	HRCG	HRCG	HRCG	70 ACRE	VSSC
17712	202217712	UDAY BHASKAR N.	STS	STS	STS	70 ACRE	VSSC
10121	202210121	AJAYAKUMAR M. S.	MCD	MMG	MME	TERLS	VSSC
13535	202213535	MOHAMMAD ALI	TRMF	RPP	SPRE	RPP	VSSC
10580	202210580	BYJU K K	TRMF	RPP	SPRE	RPP	VSSC
30399	202230399	AUSTIN C.	QDSM	QRPG	SR	RPP	VSSC
30090	202230090	AJAY K V	DTGD	SISSG	SIS	VKC	IISU
63070	202263070	PANUGANTI SHEKHAR K.	MDD	CSVUG	CSC	VMC	LPSC
60424	202260424	CHANDAN SAXENA	CSUD	CSVUG	CSC	VMC	LPSC
61234	202261234	GOUTAM MANI	CSD	SRCSC	SRQA	VMC	LPSC
60199	202260199	ABHINAV SHIV P.	FCVD	CSVUG	CSC	VMC	LPSC
15273	202215273	RAVICHANDRAN S.	CPPD	CPSG	CMSE	VKC	VSSC
15139	202215139	RAMASAMY S.	IDPD	ISMG	ASOE	RPP	VSSC
25886	202225886	REMAKANTHAN S.	NDTF	RPP	SPRE	RPP	VSSC
38152	202238152	VED PRAKASH SHARMA	QCM	QCG	MME	RFF	VSSC
60130	202260130	ARVIND TRIVEDI	EDCD	ESG	PRS	VMC	LPSC
65300	202265300	SUJITH S.	CSUD	CSVUG	CSC	VMC	LPSC
63778	202263778	SANAND T V	TPG-SC	CSPEG	CPES	VMC	LPSC
10158	202210158	ANEESH M. P.	DCBF	APEP	SPRE	APEP	VSSC
36767	202236767	SADEESH KUMAR M. S.	R & AC	APEP	SPRE	APEP	VSSC
36472	202236472	SAMJITH M. G.	EACF	APEP	SPRE	APEP	VSSC
36417	202236417	SREEKANTH H.	ELE	APEP	SPRE	APEP	VSSC
67889	202267889	SEBASTIAN P. P.	MDP	VE-CEMD	MME	VMC	LPSC
65400	202265400	ARUN BABY	RDD	CRDG	CSC	VMC	LPSC
63099	202263099	PADMAPRABHA V. R.	EDSD	ESG	PRSE	VMC	LPSC
63063	202263063	PREETHISREE G.	EDSD	ESG	PRSE	VMC	LPSC
67760	202267760	RAVI RANJAN KUMAR	MDP	MDP	MME	VMC	LPSC
33225	202233225	LIJITH SIVARAMAN K. P.	RMPF	RPP	SPRE	RPP	VSSC
30410	202230410	ANKIT SINGLA	TSCD	SPCG	SPRE	TERLS	VSSC
33212	202233212	LIPIN R.	EFCD	MEFA	CMSE	VKC	VSSC
36580	202236580	SAJI CHANDRA CHOOD O. M.	ADD	RFSG	AVN	VRC	VSSC
23123	202223123	KUMARAVEL G.	ASTD	AHTG	AERO	TERLS	VSSC