WELCOME TO BOULDER!

Jupiter Meeting 2001

Juno Auroral Workshop



http://lasp.colorado.edu/home/mop/resources/hosted-meetings/junostm16/





Earliest Bow Shock crossing ~20-30 days before JOI

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APPROACH & CAPTURE



JOI = 4th Jul Apojove = 27th Jul **Perijove 1 = 27th Aug^{**} Apojove = 23rd Sep PRM=PJ2 = 19th Oct

14-day orbits 36 in all until Feb 2018





Science Activity Period 05 Starts PJ-1day



http://lasp.colorado.edu/home/mop/missions/juno/



- Dipole field with 9.6° tilt towards 202° System III longitude.
- fiducial field lines uses
 VIP4+Khurana model for local time dawn and longitude 202°.
- Equatorial crossing distances of 10, 20, 40, 50 Rj.
- Pink crosses are separated by 1 hour for 5 hours around perijove.
- Auroral crossing locations are shown for 4 magnetic field models in different colors.





Mapping from auroral emissions in atmosphere to the equatorial plane is useless

Nominal Main Auroral decoupling distance 15-25 RJ

150

PJ5 Polar









Juno - Spacecraft & Payload SPACECRAFT DIMENSIONS Diameter: 20 meters Height: 4.5 meters JunoCam camera UVS spectrometer Waves Radio & plasma JEDI **JIRAM** High-energy particles IR spectrometer JADE **Gravity Science** Low-energy particles Magnetometer **MWR** Microwaves

Juno Investigations

Investigation	Acronym	Lead Co-I
Gravity Science	GRAV	Folkner
Magnetometer (and Advance Stellar Compass)	MAG	Connerney
Microwave Radiometer	MWR	Janssen
Jupiter Energetic Particle Detector Instrument	JEDI	Mauk
Jovian Auroral Distributions Experiment	JADE	McComas
Radio and Plasma Wave Instrument	Waves	Kurth
Ultraviolet Imaging Spectrograph	UVS	Gladstone
Jovian Infrared Auroral Mapper	JIRAM	Adriani
Juno Color, Visible Light Camera	JUNOCAM	Hansen



JADE

	JADE-E 2 (3 Sensors)	JADE-I
Energy Range	100 eV – 100 keV	10 eV/q – 50 keV/q
ΔE/E	10-14% (depends on E)	18-28% (depends on E)
FOV (Inst)	360°x 3-6°	270°x 8.5°
FOV Tracking	Uses 1s Mag data	_
Pixels/Res	2 3 Sensors x 16 / 7.5°	12 / 22.5°
Mass Range	_	1 - 64 amu
Μ/ΔΜ	_	2.5 – 11 (depends on M & E)
G factor/pixel	~2-5 x10 ⁻⁵ cm² sr eV/eV	~4 x10 ⁻⁵ cm ² sr eV/eV
Time Res	Full PAD each 1s	4π each 30s spin



JEDI





Parameter	Capability	Comment
Electron Energies	25-1000 KeV	Abuts JADE
Ion Energies	H+: 15-10000 keV He: 25-10000 O/S+: 40-10000 keV	Abuts JADE
Energy Resolution	25%	Earth aurora spectra driver
Time sampling	0.5 sec	<= 30 km auroral sampling /
Angle resolution	18° using rotation	Resolve loss cone R < 3 RJ /
Pitch Angle (PA) Coverage	0-360 degrees for whole orbit	Requires 3 JEDI heads with 160°x12° fans
Ion Composition	H above 10 keV He above 50 keV O above 45 keV	Separate S from O for E > 200 keV

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