AMPLIFIED PULSED DYE LASERS

The Cobra-Stretch Dye laser is Spectra-Physics' amplified pulsed dye laser system, German engineered by our partner firm Sirah GmbH for precision, stability and reliability.

The Cobra-Stretch laser's grazing incidence resonator utilizes the grating's dispersion, twice per oscillator round-trip, ensuring narrow linewidths with low ASE. The resonator design also allows for the addition of a second grazing incidence grating. The gratings are mounted and calibrated on a single linear stage that is activated by a button on the new USB coupled touch screen remote. This patented Grating Lift option allows for the single dye laser resonator to cover the entire dye tuning range without Wood's anomaly holes or recalibration.

The laser's quartz dye cuvettes are held in place by state-of the-art cell mounts manufactured for stability and precision from high performance alloys and graphite-reinforced polymers. Designed for extreme ease of use, the mounted cuvettes and the entire dye circulator unit can be removed in seconds without tools and without interrupting the dye flow loop.

Reliability is inherent in the laser system design. All oscillator components are mounted on a solid block of low thermal expansion stainless steel, mechanically and thermally isolated from the outer laser housing. By removing virtually all mechanical and thermal stress from the oscillator block and by using opto-mechanics optimized for easy and reproducible operation, the dye laser's oscillator stage requires very limited user adjustment.

The Cobra-Stretch Advantage

- Wavelength coverage from 190 nm to >11 μm
- Spectral linewidths <0.03 cm⁻¹
- Patented Grating Lift option
- User friendly software fully LabView enabled
- High output energy, >240 mJ with Quanta-Ray[®] Nd:YAG at 800 mJ per pulse
- High quality beam profile with capillary cell option
- Touch screen remote



Applications

- Laser induced fluorescence
- Lidar and remote sensing
- Combustion and atmospheric studies
- Laser spectroscopy
- Cavity ringdown spectroscopy
- CARS
- Photolysis



Cobra-Stretch Optical Layout



Cobra-Stretch Dimensions





Dimensions in inch (mm)

Specifications

	Groove Density	Grating Length	Tuning Range	Linew	vidth	Efficiency			
Prism Model Linewidth Specifications									
Cobra-Stretch-P	_	-	370–920 nm	150 pm	5 cm ⁻¹⁽⁵⁾	30% ¹			
Grating Models Linewidth Specifications									
Cobra-Stretch-G	1800 lines/mm ⁴	60 mm	400-920 nm	3.6 pm	0.10 cm ⁻¹⁽¹⁾	30%1			
	2400 lines/mm ⁴	60 mm	370-760 nm	2.7 pm	0.08 cm ⁻¹⁽²⁾	30%²			
	3000 lines/mm	60 mm	370-620 nm	2.0 pm	0.06 cm ⁻¹⁽²⁾	30%²			
Cobra-Stretch-LG	1800 lines/mm ⁴	90 mm	400-920 nm	2.4 pm	0.06 cm ⁻¹⁽¹⁾	30%²			
	2400 lines/mm ⁴	90 mm	370-760 nm	1.8 pm	0.06 cm ⁻¹⁽²⁾	30% ²			
	3000 lines/mm	90 mm	370-620 nm	1.4 pm	0.05 cm ⁻¹⁽²⁾	30% ¹			
Cobra-Stretch-D	1800 lines/mm ⁴	2 x 90 mm	410-900 nm	1.7 pm ³	0.05 cm ⁻¹⁽¹⁾	27% ¹			
	2400 lines/mm ⁴	2 x 90 mm	370-710 nm	1.2 pm ³	0.04 cm ⁻¹⁽²⁾	27% ²			
	3000 lines/mm	2 x 90 mm	370-580 nm	1.0 pm ³	0.03 cm ⁻¹⁽²⁾	27% ²			
Wavelength and Beam Characteristics									
Absolute Wavelength Accuracy	<15 pm (prism model: 0.5 nm)								
Wavelength Resetability	<2 pm (prism model: 0.05 nm)								
Wavelength Stability	<1.5 pm/°C (prism model: 10 pm/°C)								
Divergence (typical)	0.4 mrad with main amplifier								
Polarization	>98%, vertical								
ASE	<0.5%								
Pump Energies (with EBP cell) with amplifier	50–650 mJ (800 mJ) @ 532 nm 50–400 mJ (500 mJ) @ 355 nm								
Requirements									
Voltage	110–230 V, single phase, 50 Hz/60 Hz								
Computer	Single USB								
Operating System	Windows 2000 / Windows XP / Windows Vista								
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1. At 625 nm (peak DCM) pumped at 532 nm 2. At 570 nm (peak Rhodamine 6G) pumped at 532 nm

Exact linewidth depends weakly on wavelength; value given for 450 nm
1800 lines per mm Woods Anomally occurs at 560–571 nm and 2400 lines per mm Woods Anomally occurs at 423–434 nm

5. For wavelengths <660 nm

532 nm-pumped Dye Tuning Curves¹



355 nm-pumped Dye Tuning Curves¹



1. Typically measured performance; not a guaranteed or warranted specification.



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