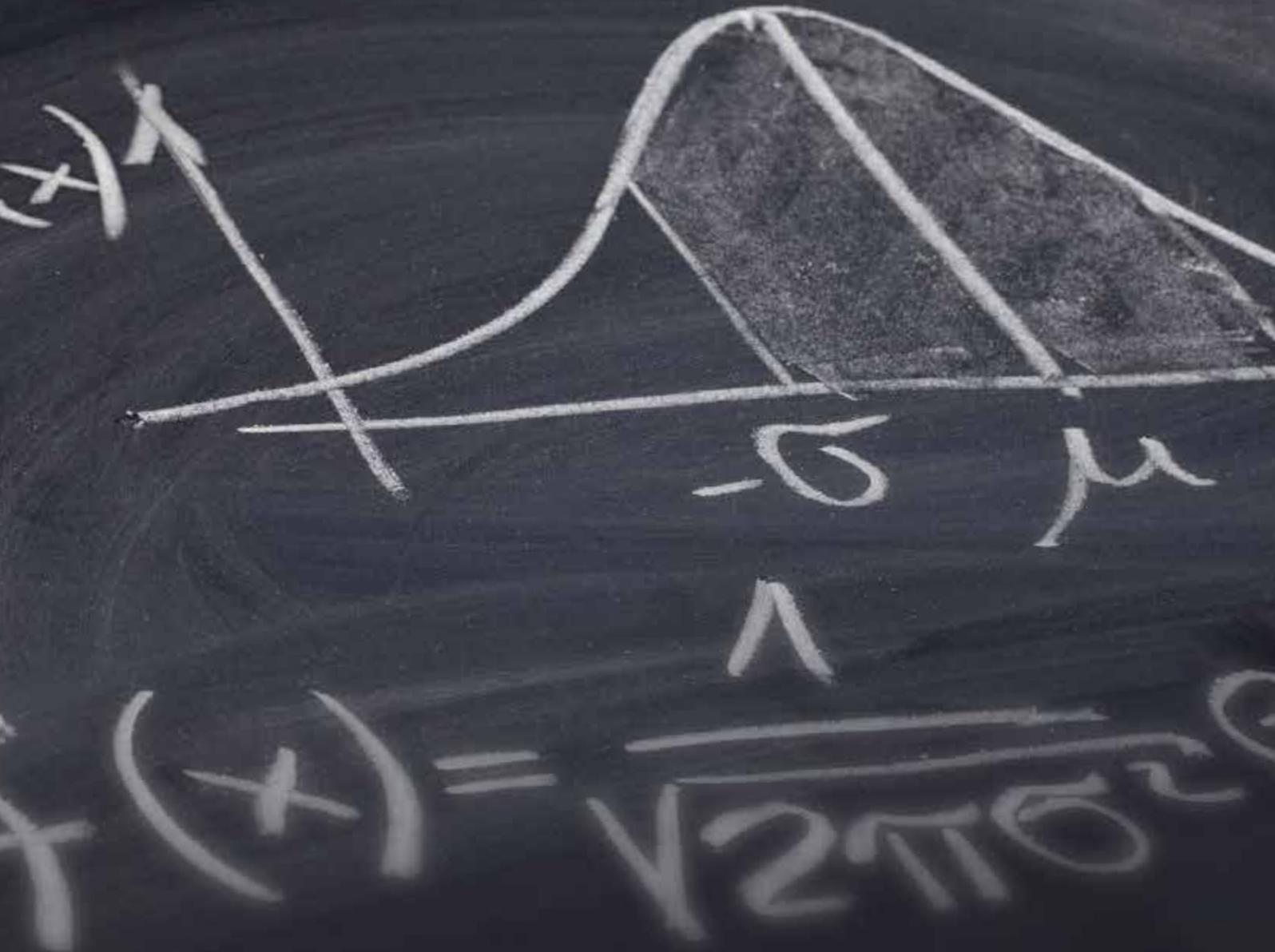




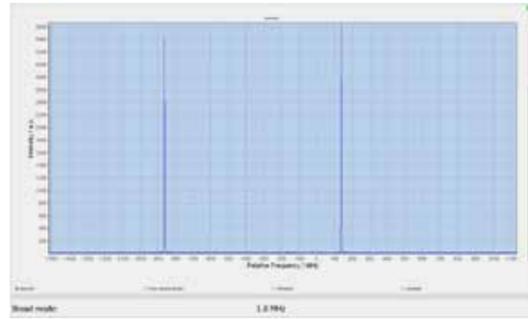
HighFinesse
Laser and Electronic Systems



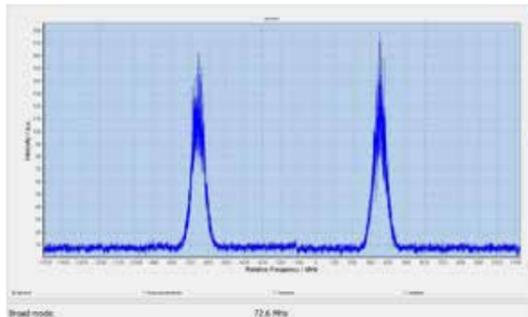
Linewidth Analyzer

High resolution lineshape analyzer for narrow and broadband spectra of various lasers.

HighFinesse Linewidth Analyzer



Live image of the LWA software in broadband mode measuring a 780 nm laser and automatically evaluating the spectrum. The determined linewidth by a Lorentzian fit is 1.8 MHz, which is close to the lower limit of the broadband mode. The laser can be further evaluated in the narrowband mode.



Live image of the LWA software in narrowband mode measuring a broadened 780 nm laser and automatically evaluating the spectrum. The determined linewidth by a Gaussian fit is 72.6 MHz.

The HighFinesse Linewidth Analyzer (LWA) is a specialized high-end device for measuring and analyzing the spectral shape of various laser sources. It is based on a scanning Fabry-Pérot interferometer.

- Different models cover large wavelength intervals in the complete optical regime
- Measurable linewidths range from 0.1 – 300 MHz depending on the model
- Automatic evaluation of noise and lineshape spectra
- High sample rate of 30 MS/s
- High linewidth accuracy down to 20 kHz
- No reference source required

The LWA is perfectly suited for laser development and adjustment. In combination with a HighFinesse wavemeter high resolution classification of lasers and laser systems can be performed.

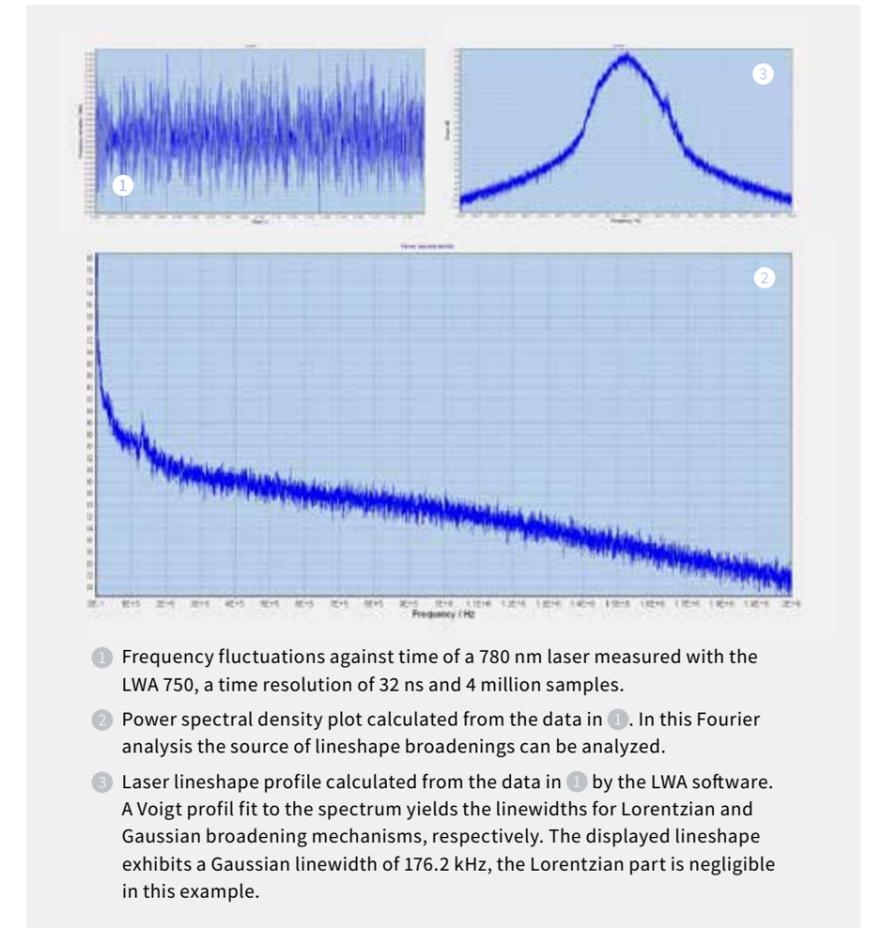


Through the use of two measurement modes, the LWA can analyze both very narrow laser lines down to 100 kHz as well as broader spectra up to 300 MHz. It features an extremely high resolution and accuracy in determining the linewidth of the respective laser source and its spectral lineshape.

Once connected to the PC via ethernet, the LWA features an intuitively usable software interface which automatically evaluates the data and presents it to the user. By tracking the change in the lineshape parameters over time the stability of the light source can be monitored.

The LWA is ideal for optimizing the stability of laser setups by revealing mechanical, acoustic and electronic noise. Also, the high spectral resolution allows supervising the single-mode operation of the laser.

Linewidth analysis in the narrowband mode



LWA Model	Wavelength Range [nm]	Linewidth Range [MHz]		LWA 750	Broadband Mode ¹⁾	Narrowband Mode ¹⁾
		Broadband Mode ¹⁾	Narrowband Mode ¹⁾			
400	380 – 430			Acquisition Time	0.1 s	typ. 0.1 s
500	430 – 660			Evaluation Time ²⁾	< 1 s	1 – 5 s
750	615 – 885	< 2 – 300	0.1 – 2	Sampling Rate	typ. 16 kSa/s	typ. 30 MSa/S
980	825 – 1200			Frequency Resolution	100 kHz	Noise Spectrum < 100 Hz Lineshape Spectrum < 2 kHz
1500	1200 – 1700			Linewidth Accuracy ³⁾	typ. 500 kHz	typ. 20 kHz
				Required Input Power	typ. 1 mW	typ. 1 mW
				Evaluation Options	Lineshape Spectrum Linewidth ¹⁾	Noise Spectrum Lineshape Spectrum Linewidth ¹⁾
				Interface	Ethernet, LWA control software included	
				Optical Interface	Fiber-coupled FC/APC	
				Operating System	Windows - 64 Bit	
				Power Supply	External controller with power supply included	

1) Analysis only for single-mode and cw laser sources.

2) Depending on PC hardware, settings and required evaluation options.

3) Depending on the LWA-model, laser lineshape and stabilization.
For short wavelengths and broad lasers values may increase.



HighFinesse
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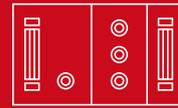
Wavelength Meter

HighFinesse/Ångstrom offers sensitive and compact wavelength meters with a large spectral range for high speed measurement of lasers. The optical unit consists of temperature-controlled Fizeau-based interferometers that are read out by photodiode arrays. The high absolute accuracy is achieved by use of solid state, non-moving optics. The optical unit and associated electronics are housed in a compact, thermal casing. The connection to a computer or notebook is realized via a highspeed USB 2.0 port, which allows a high data read-out rate. The analyzing software displays all the interferometer information.



Spectrometer OSA

HighFinesse/Ångstrom optical spectrometers LSA and HDSA are designed to analyze the multi-line or broadband spectrum of light sources like cw and pulsed lasers, gas discharge lamps, super luminescence diodes, semiconductor laser diodes and LEDs. They are suitable to analyze the spectrum of telecom signals, resolve Fabry-Perot modes of a gain chip, and produce a spectral measurement of gas absorption.



Precision Current Sources

HighFinesse Precision Current Sources have been developed for experiments and quantum technologies in the areas of cold-atom and solid state physics. The linearly regulated BCS (Bipolar Current Source) and UCS (Unipolar Current Source) series deliver highly stable, low noise source currents for high precision magnetic field control. The current output is floating or is on a used defined potential. Ultrafast response to control signals and trigger functions, clear grounding, connection and signal isolation schemes make the integration of the current sources into complex experimental systems easy.



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