

Aragon Photonics Labs.

Brillouin high-resolution spectroscopy

Based on revolutionary **all-optical patented technology**, Aragon Photonics produces the most advanced High Resolution Optical Spectrum Analyzer products.

The principle behind BOSA performance is **stimulated Brillouin scattering (SBS)**, a non-linear optical effect produced by narrow-linewidth high-power light propagating through an optical fiber that causes a very narrow filtering effect. By pumping SBS with an external cavity tunable laser source (TLS), the filter is swept along the spectral region of interest, giving the high-resolution optical spectrum.

The non-linearity of SBS gives the BOSA great advantages over other classic spectroscopy methods such as diffraction gratings, Fabry-Perot filters or heterodyne OSAs, all of them linear. The amplification effect of SBS greatly enhances the dynamic range of the measurement compared to passive filtering. The threshold imposed by SBS also helps cancel the spurious effects of the local oscillator sidemodes and lineshape that produce measurement artifacts in heterodyne OSAs, giving the **highest spurious-free dynamic range** measurement available in any high-resolution OSA.

Its simultaneous, span-independent **10 MHz (80 fm) resolution and 80 dB dynamic range**, make the BOSA the best performing high-resolution OSA. The non-linear nature of SBS creates a filter that is not only narrow but extremely sharp, maintaining a **width under 1 pm more than 50 dB below the peak**, which allows for precise measurement of signal components even really close to the optical carrier.

The high performance of the BOSA is only possible by using top quality components and controlling them very carefully. The SBS core is engineered for maximum filtering efficiency and stability and the detection stage uses fast high quality 16-bit DAQs. In our BOSA 200 series we include an external cavity fast tunable laser, which is precisely monitored with a **physical standard wavelength reference** for maximum accuracy.