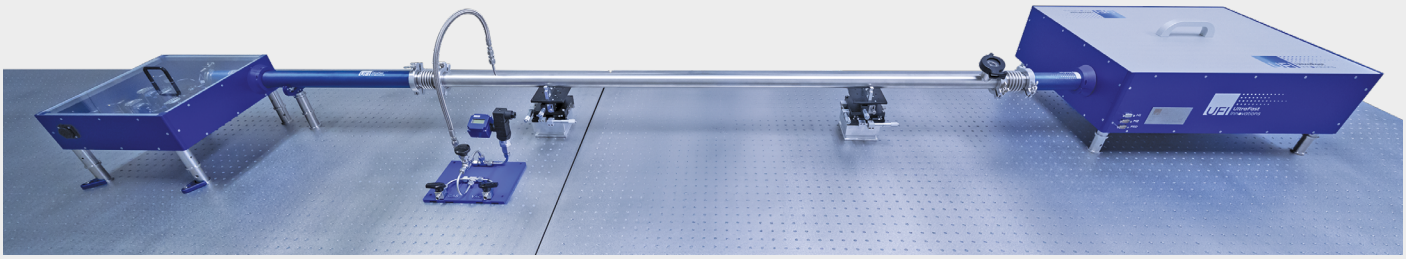
UltraFast Innovations

YOUR KEY to innovation and success

Hollow-Core Fiber Compressor

SAVANNA



SAVANNA is a hollow-core fiber compressor that shortens the duration of a laser pulse after spectral broadening. First, the spectral bandwidth is broadened by nonlinear interaction of the high-energy femtosecond pulses with a gas inside a hollow-core fiber. The resulting supercontinuum pulses are then compressed using our ultra-broadband dispersive mirrors. The increased spectral bandwidth allows up to 6 times shorter pulses than the input.
SAVANNA is based on our extensive expertise in generating intense few-cycle pulses for attosecond science. It combines high transmission with unique ultra-broadband compression. Besides pulse compression, the resulting coherent white light can be used for several state-of-the-art applications from time-resolved spectroscopy to driving subsequent (X)UV generation.

Key Product Features:

- Input pulse duration: single fs to hundreds of fs
- Input pulse energy: µJ to several mJ
- Repetition rate: single Hz to MHz
- Fiber transmission: up to 70%
- Spectral bandwidth:
  typical 400 - 1000 nm for Ti:Sa input
  typical 600 - 1300 nm for 1030nm input
- Standard footprint: 300 x 60 cm^2
- Compression factor up to 6

Customization Options:

- Active beam pointing stabilization unit
- Output bandwidth and pulse duration variable
- Versatile dispersion management

SAVANNA - a turnkey system for spectral broadening

SAVANNA is designed to be the optimal addition to your laser. It features a beam stabilization and focusing unit with software-controlled setpoints for precise alignment. The fiber assembly includes gas handling and optionally a vacuum pump. The system is complete with a dedicated compressor unit, fixed to the fiber assembly, equipped with dispersive mirrors tailored to the specific spectral range - ensuring an integrated and efficient performance.

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UltraFast Innovations is a spin-off from the LMU Munich and the Max Planck Society.

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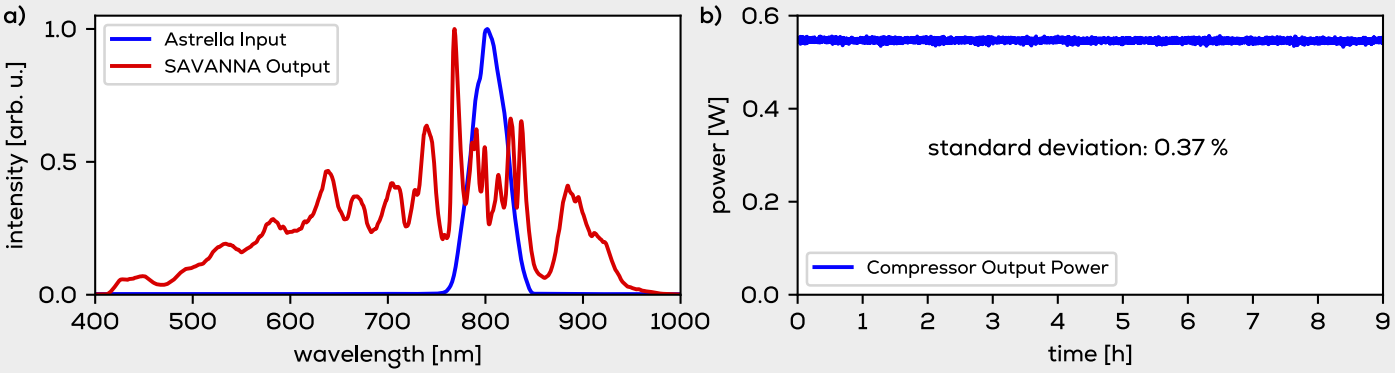
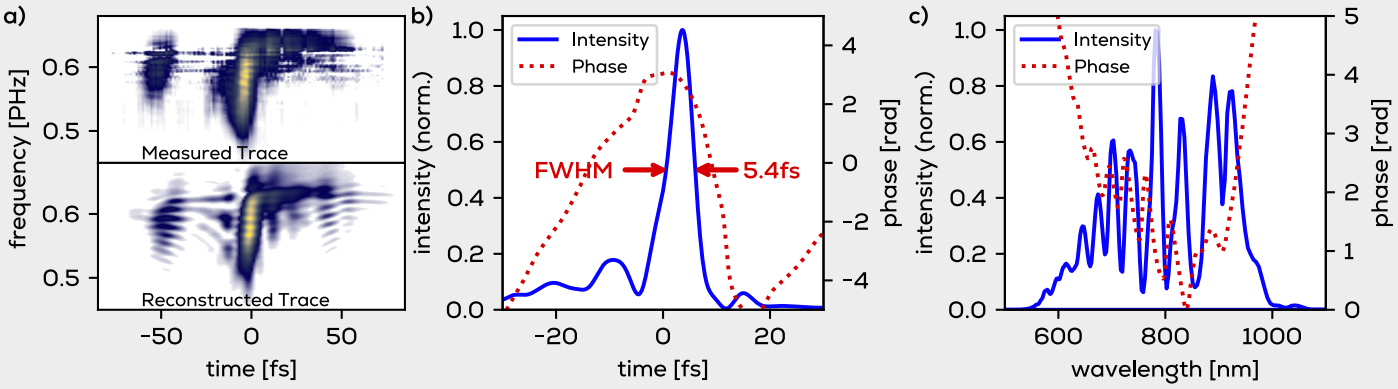
Typical performance with Ti:Sapphire systems:

SAVANNA is the perfect extension to your laser. As an example, the figures below showcase SAVANNA's performance when driven by an Astrella laser. The results show excellent stability below 0.37% and a pulse duration of 5.4 fs.



a) The spectrally broadened output of an Astrella laser using SAVANNA spans more than an optical octave.
b) The output power exhibits an excellent stability with only 0.37% rms fluctuations.



a) Measured and reconstructed TG-FROG trace.
b) The pulse duration of the compressed output is 5.4 fs.
c) Reconstructed spectrum and phase.

Supported laser systems:

SAVANNA is ideally suited for Titanium:Sapphire or Ytterbium-based laser systems. It can also be combined with optical parametric (chirped pulse) amplifiers or other femtosecond laser systems.

Featured related products:

SAVANNA-HP

STRETCHED FIBER FOR HIGH-POWER SYSTEMS
for multi-mJ pulse energies with more than 100 W average power

KILIMANJARO

MULTIPASS CELL
for ps to fs input pulses, µJ to several mJ pulse energy, tunable option available

CASCADED SYSTEM

Use a combined system to compress from single-ps pulse duration to the few-cycle regime:
SAVANNA + SAVANNA or KILIMANJARO + SAVANNA.