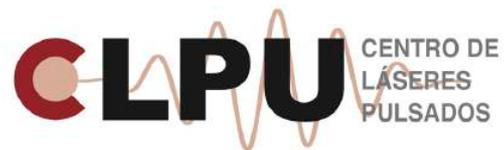


Ultraprecisión Láser: Aplicaciones en Medicina, Industria y Telecomunicaciones

26 Diciembre 2015 Madrid, España

Servicios y desarrollos láser en el CLPU

Mauricio Rico
mrico@clpu.es



Situación y equipamiento en el CLPU

Mid 2014



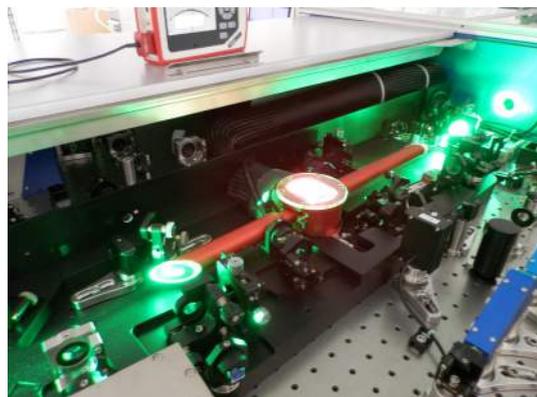
Mid 2016



10 Hz, 30 fs
20 TW
200 TW

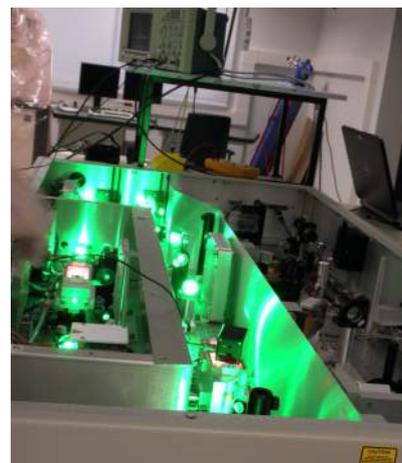
1 Hz, 30 fs
1 PW

Femtopower HE 2 mJ Pro CEP-IV



800 nm
1 KHz
CEP stabilized
Hollow Fiber
20 fs up to 3 fs

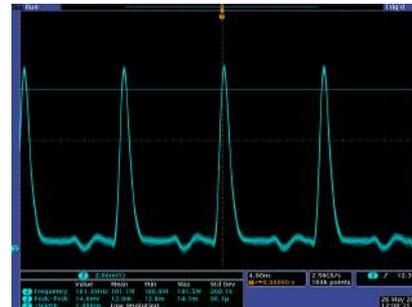
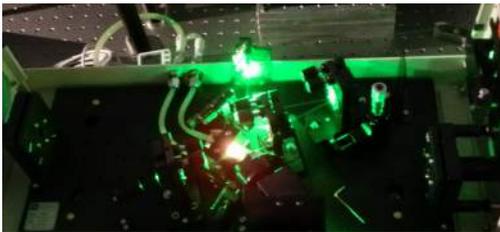
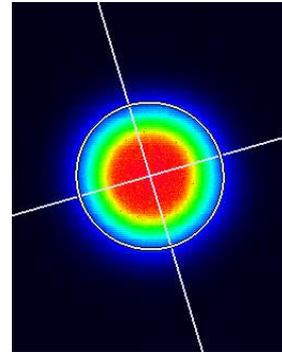
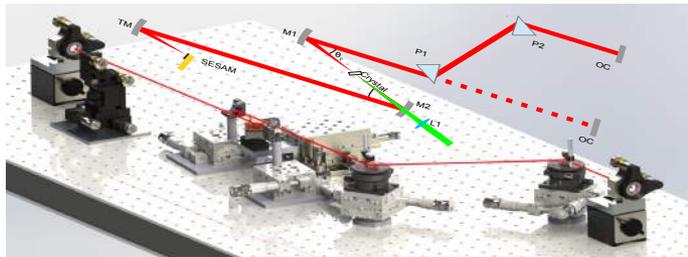
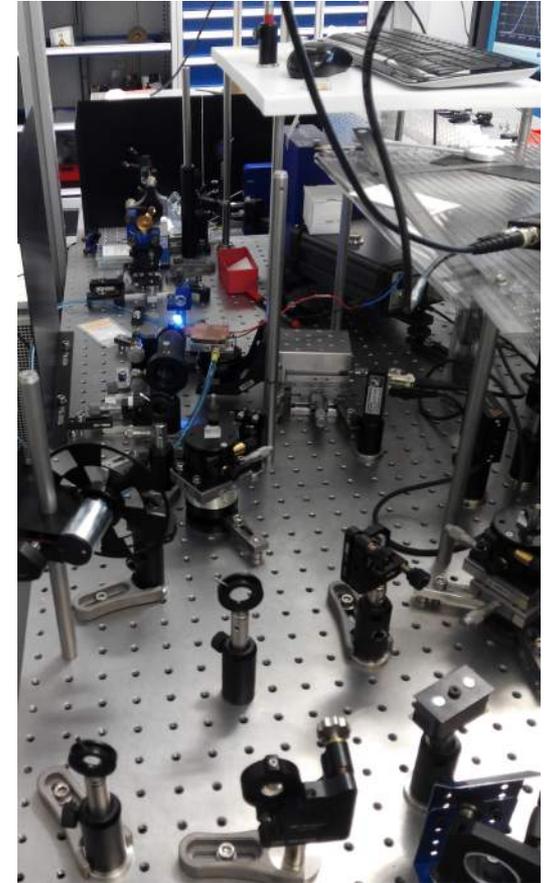
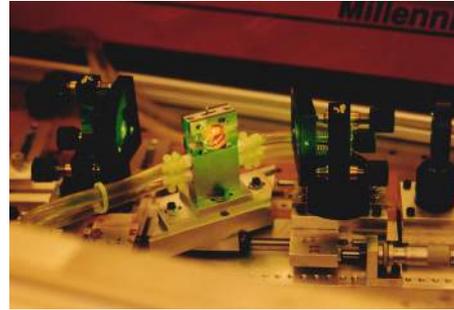
Spitfire ACE-120F



800 nm
1-10 KHz
Amplifier 7 mJ
100 fs

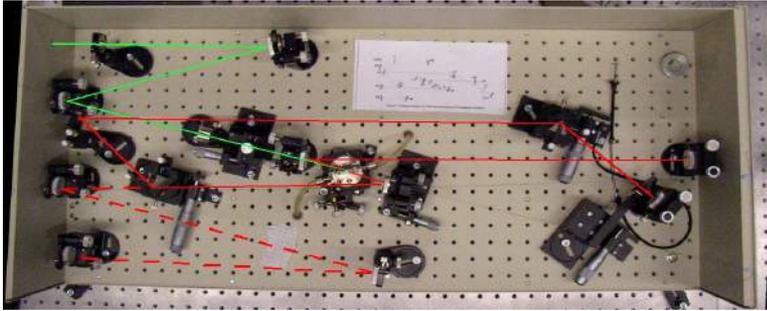


Unidad de osciladores

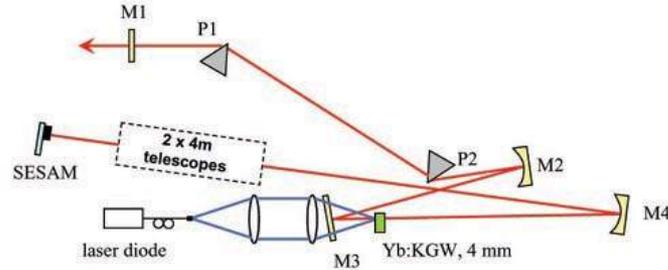


Unidad de osciladores

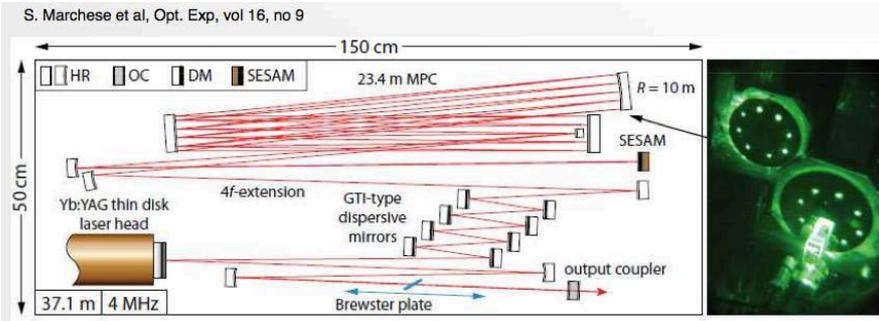
Láseres en "Mode-locked" (Ti-Záfiro - Yb/Nd/Tm)



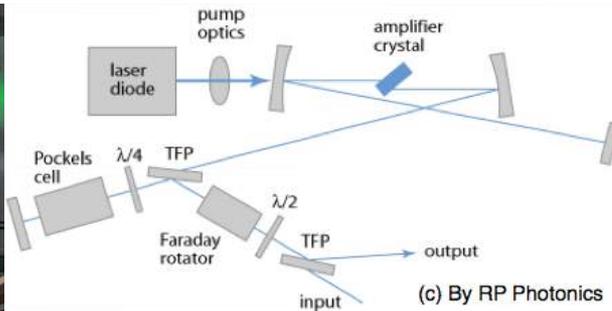
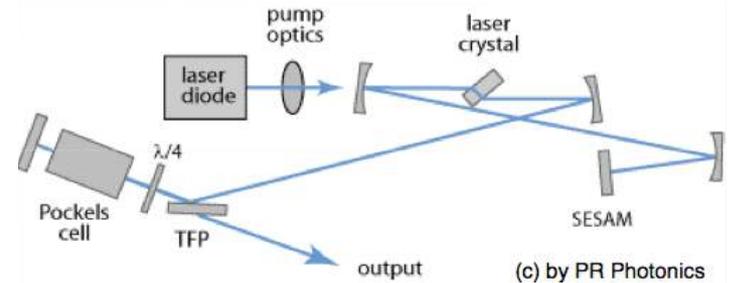
Osciladores de alta potencia



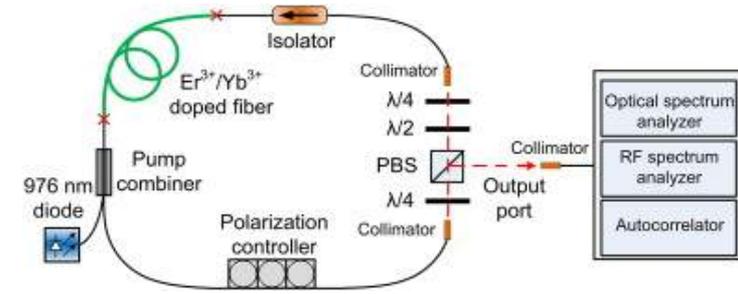
Osciladores "Cavity dumped"



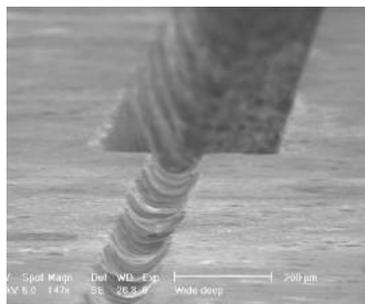
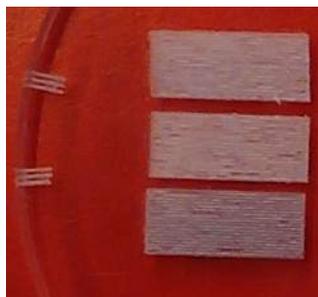
Amplificadores lineales y regenerativos



Láseres en Fibra



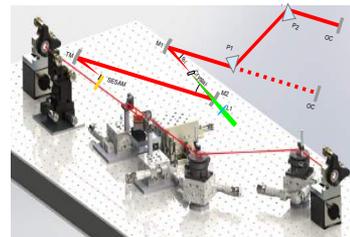
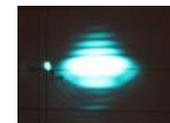
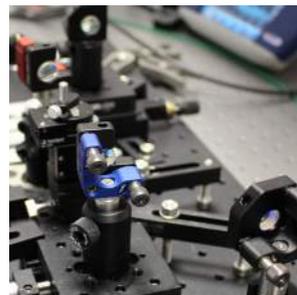
Servicios



Procesado de materiales
Generación de Rayos X
Aplicaciones médicas
Ultrasonidos
Filamentación láser

ULTRAFAST LASERS

Desarrollos

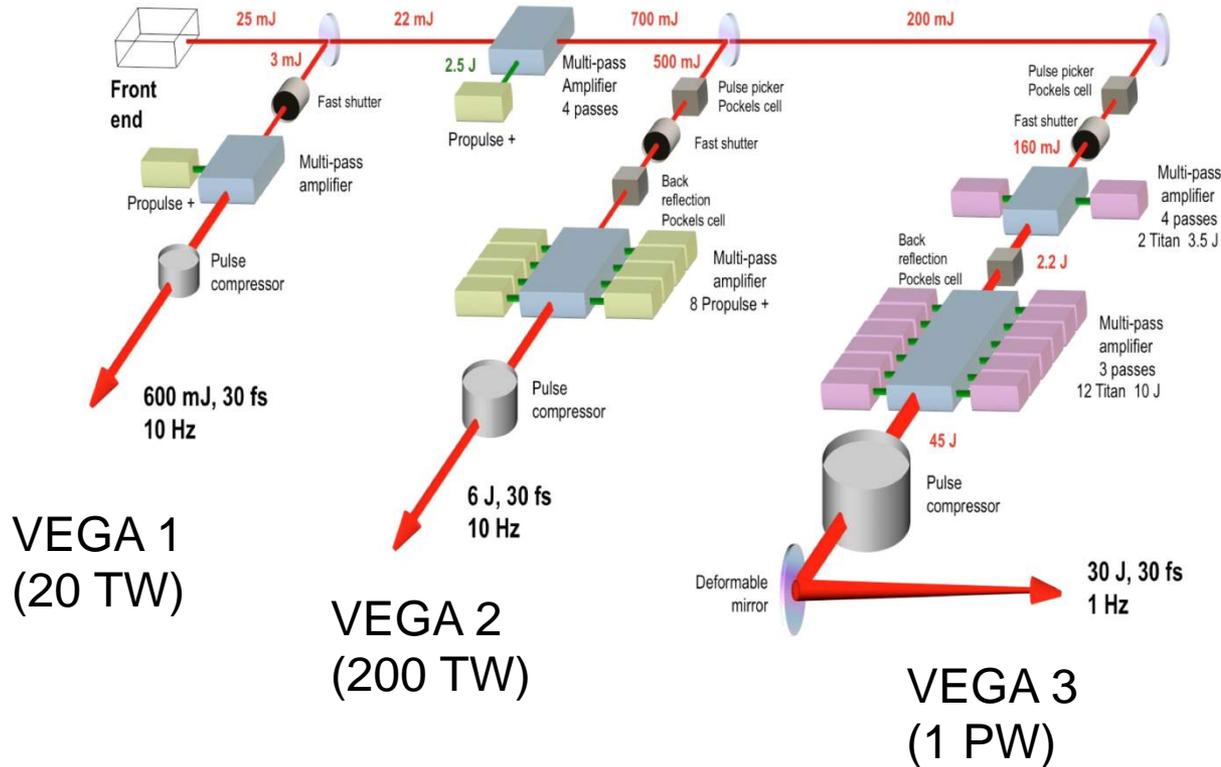


Jeanalogia, Fyla, Valeo
Tecnatom, Tecnivial...

Ingeniería Inversa

Petawat Laser System - VEGA

(Vacuum, Energy and General Applications of a petawatt laser system)



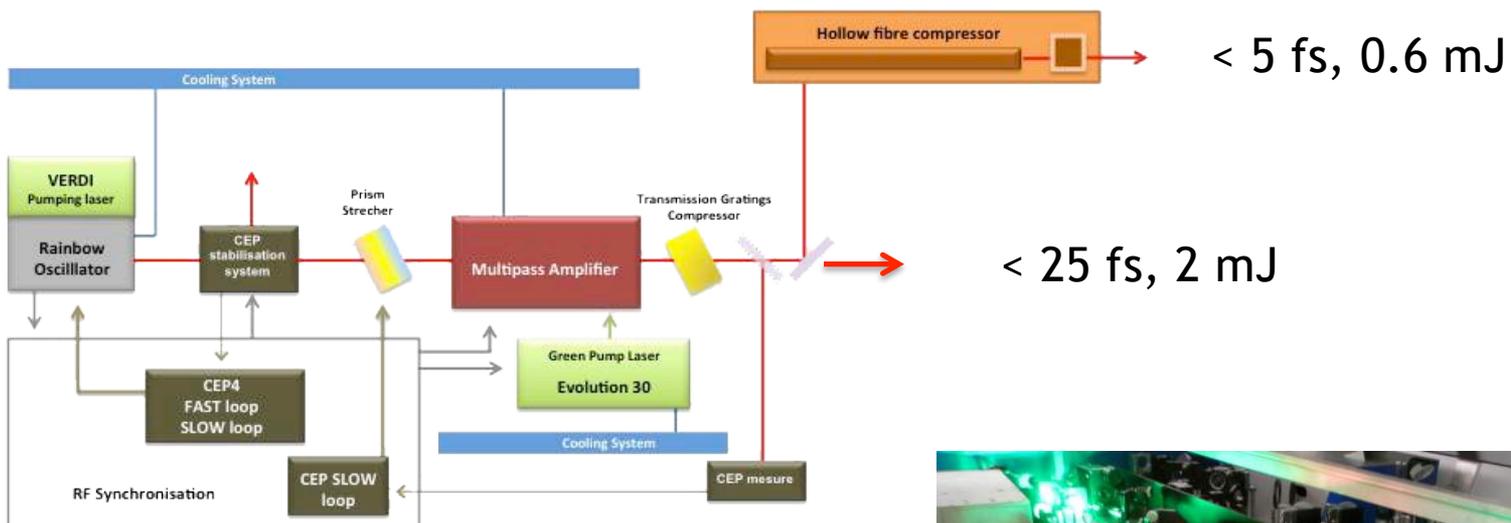
Test acceptance 200 TW in December 2015.

Final test PW end of March 2016.

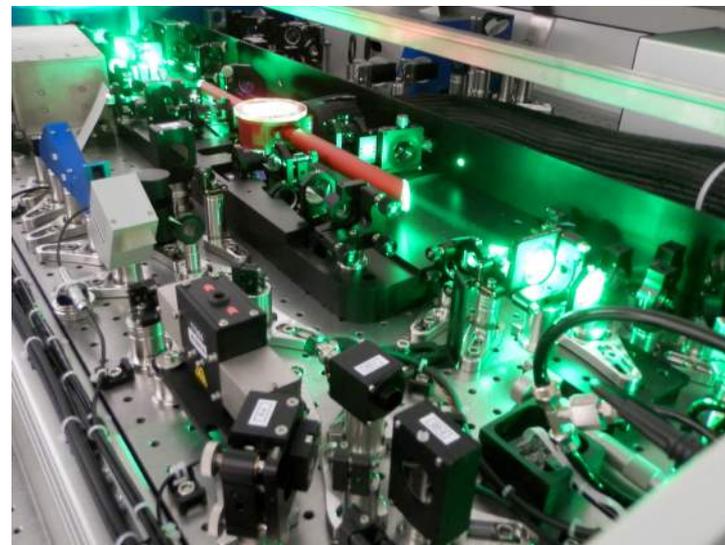
Availability of these systems along 2016.

Aplicaciones de alta potencia pico o en grandes superficies.

PULSOS ULTRACORTOS 3-5 FEMTOSEGUNDOS

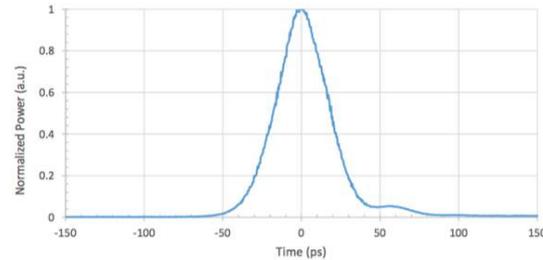
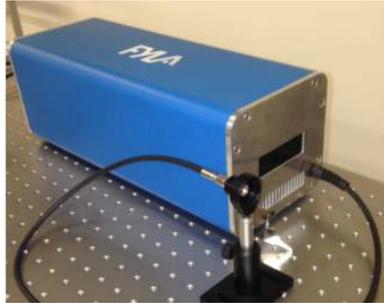


| Femtopower PRO - HE CEP4 | |
|---------------------------|---|
| Energy / pulse | > 2 mJ (amplifier) < 0.6 mJ (post-compressed) |
| CEP stabilisation | < 200 mrad rms (3 hours) |
| Duration / pulse | < 25 fs < 5 fs (post-compressed) |
| Repetition Rate | 80 MHz (oscillator) 1 kHz (amplifier, post-compression) |
| Beam diameter ($1/e^2$) | 20 mm amplifier |
| M ² Parameter | < 1.6 |
| Pre-Pulse Contrast | > 10 ⁸ :1 |
| Energy Stability | < 1.5% rms (1000 shots) |
| Central Wavelength | 790 nm |
| Polarization | Linear, p |
| Pointing stability | < 10 μ rad rms |

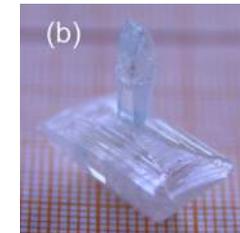
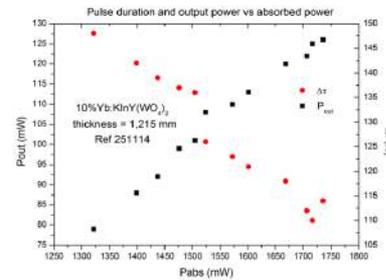
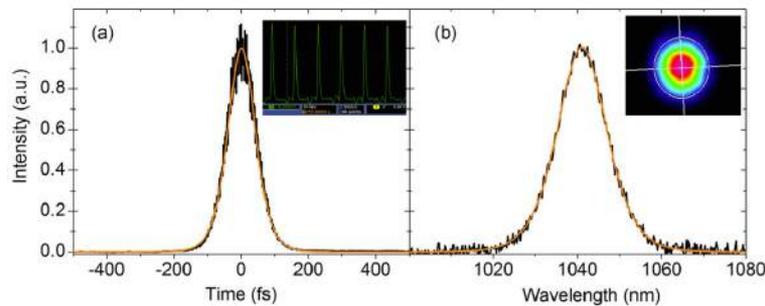


FEMTOLASER y ULTRALASER

- Estudio de aplicaciones industriales para procesamiento, marcado, etc..
- Prototipo Fibra laser, 2-20 ps, 20 MHz, 2W. (FYLA)



- Demostración prototipo estado solido (100 fs) en mesa óptica.



ULTRALASER: Mejora en prestaciones en fibra (potencias/energías/pulsos) y prototipo compacto de estado sólido en fs.

Dar servicio de alto valor tecnológico a los usuarios industriales/científicos del CLPU



Tiempo usuario experimental

Colaboración Proyectos

Consultoría / Asesoría

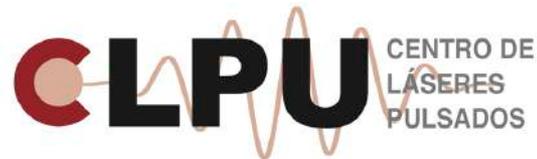
Servicio subcontratado

Desarrollo de set-up específicos

Equipos de medida láser

Thanks

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Centro de Láseres Pulsados.

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