

**PLEC DE PRESCRIPCIONS TÈCNIQUES**

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**SUPPLY OF A “NARROW LINEWIDTH HIGH POWER CW LASER AT 813 nm FOR EXPERIMENTS WITH ULTRACOLD STRONTIUM ATOMS” FOR ICFO, THROUGH AN OPEN PROCEDURE NOT SUBJECT TO HARMONIZED REGULATION**

**FILE NUMBER: ICFO-2026-047**

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## CLAUSE 1. Object of the contract

Narrow linewidth high power CW laser operating at 813.428 nm for the generation of clock-magic optical trapping potentials for cold strontium atoms, for quantum simulation experiments.

## CLAUSE 2. Needs to satisfy

This laser is required for the generation of an optical lattice in a quantum-gas microscope experiment, which will allow the quantum simulation of Hubbard models and the pinning of the atoms in the lattice sites during the imaging process, to resolve the occupation and spin of each lattice site. The high power is necessary to scale up the size of the systems that can be realized in the experiment, allowing to go beyond what is accessible with classical computing methods in a quantum simulation/computing approach.

## CLAUSE 3. Technical specifications

Center wavelength in vacuum: 813.428 nm (strontium's clock-magic wavelength)

Output power: > 30 W

Linewidth (100  $\mu$ s integration): < 20 kHz

Power stability:<0.75%@3hrs, RMS

Relative Intensity Noise (RIN): <0.05% (10Hz-100MHz integration, RMS)

Total tuning range: < $\pm$ 0.075 nm, no mode hop

PZT frequency tuning range: >3GHz

PZT frequency tuning bandwidth: >5kHz

Fast frequency tuning range (current): >500MHz

Fast frequency tuning bandwidth (current): >1MHz

Output mode: free space collimated output

Beam quality:  $M^2 < 1.1$

Polarization: linear, >20dB

## CLAUSE 4. Operation

The laser will use water cooling (the chiller does not need to be included).

## CLAUSE 5. Transportation

5.1. The proposal will include transportation to ICFO's facilities (Leticia Tarruell Laboratory). **DAP incoterm will apply.**

5.2. The laser will be placed in the selected location by ICFO.

## **CLAUSE 6. Warranty and Follow-on Support**

Full Warranty: minimum of 2 years after acceptance of the equipment. Additional years of warranty will be evaluated as indicated in Annex 2.

The warranty will include the replacement of any faulty or damaged part(s) during normal use of the part(s) or component(s). It will cover any cost related with the disassembly, transportation, reparation and re-assembly of the damaged parts or component(s), including all shipping costs.

System lifetime support: By phone and e-mail with a response within 48 hours.

## **CLAUSE 7. CE MARKING**

CE MARKING is required.

## **CLAUSE 8. Delivery Time**

The system must be delivered at ICFO **before 31st October 2026**.

It includes the manufacture of the system and the transportation at ICFO's premises.

## **CLAUSE 9. Target Price**

195.000,00 EUR

Castelldefels, on the date of its digital signature

Prof. Dr. Leticia Tarruell  
GL Ultracold Quantum Gases