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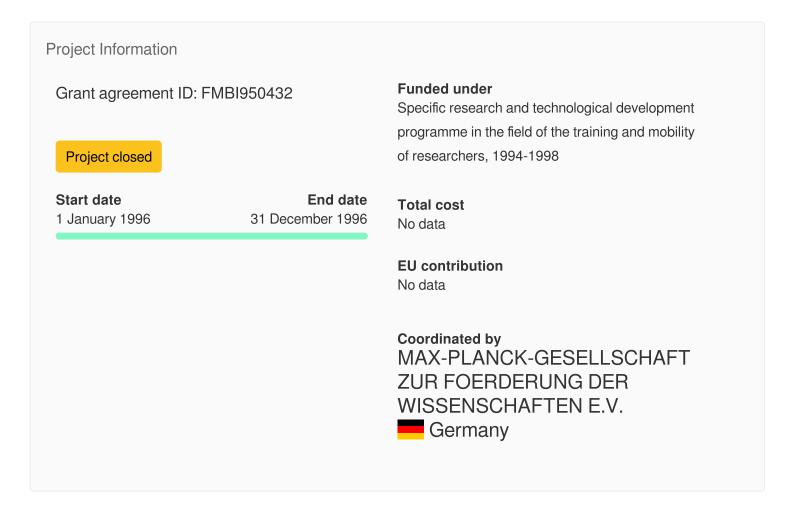
Atoms channelled by light forces on a mesoscopic scale - sub -wavelength imaging techniques, application to lithography



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Fact Sheet



Objective

Atoms channelled by light forces on a mesoscopic scale Sub-wavelength imaging techniques Application to lithography

Recent progresses in laser cooling techniques, give hope for the realisation of extremely well focused neutral atomic beams, which could be accurately deflected by lasers and therefore be used to write tiny patterns on a substrate.

Our goal is to investigate techniques relying on light forces which can break an atomic beam into a microscopic 2D array of parallel atomic sub-beams, with a pitch of half an optical wavelength: under the effects of dipole forces, the atoms are be confined in the nodes of an intense 2D standing wave, down to a mesoscopic scale of a few tens of na- nometers.

In order to demonstrate this strong confinement, we are also developing new detectors with the aim of imaging a section of the atomic beam, with a much better spatial resolution than an optical wavelength.

Both these beam experiment and the sub-wavelength atomic detectors shou allow us to study dynamically the evolution of the atomic wave functions during the interaction with stationary or time varying light fields.

Fields of science (EuroSciVoc) 6

<u>natural sciences</u> > <u>physical sciences</u> > <u>condensed matter physics</u> > <u>soft matter physics</u>

<u>natural sciences</u> > <u>physical sciences</u> > <u>optics</u> > <u>laser physics</u>



Programme(s)

FP4-TMR - Specific research and technological development programme in the field of the training and mobility of researchers, 1994-1998

Topic(s)

0302 - Post-doctoral research training grants

TP03 - Atomic and Molecular Physics

Call for proposal

Data not available

Funding Scheme

Coordinator



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Total cost

No data

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Participants (1)



Not available



EU contribution

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Address



Total cost

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