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

Fact Sheet

Project Information

Grant agreement ID: FMBI950432

Project closed

Start date
1 January 1996

End date
31 December 1996

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

Total cost
No data

EU contribution
No data

Coordinated by
MAX-PLANCK-GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.
Germany

Objective

Atoms channelled by light forces on a mesoscopic scale Sub-wavelenqth imaqing techniques Application to lithoqraphy
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) ℹ

natural sciences > physical sciences > condensed matter physics > **soft matter physics**

natural sciences > physical sciences > optics > **laser physics**

ℹ

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

RGI - Research grants (individual fellowships)

Coordinator

MAX-PLANCK-GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.

EU contribution

No data

Total cost

No data

Address

1,Hans-Kopfermann-strasse 1
85748 GARCHING
Germany

Participants (1)

Not available

France

EU contribution

No data

Address

Total cost

No data

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