

CAPTURE OF ATOMS AND SMALL PARTICLES
IN AN OPTICAL TRAP FORMED BY SEQUENCES
OF COUNTER-PROPAGATING LIGHT PULSES
WITH A LARGE AREA

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S u m m a r y

A new trap for atoms and small particles based on the interaction between an atom and a field of counter-propagating light pulses that are partially superposed in time has been proposed. A substantial difference from known analogs consists in that the atom–field interaction is close to adiabatic one, which allows a considerably higher momentum to be transferred to the atom within the same time interval and makes the trap smaller in size. It has been shown that, owing to the dependence of light pressure force on the atom velocity, the atomic ensemble is cooled down at its interaction with the field.