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# Radiation Pressure Acceleration: Perspectives and Limits

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The "light sail" (LS) concept, i.e. the radiation pressure acceleration (RPA) of ultrathin targets was recently in press highlights because of the "breakthrough starshot" proposal for sending space probes beyond the solar system, thanks to the high acceleration efficiency. Scaled down to femtosecond lasers with petawatt power, amongst the different mechanisms for laser-plasma based ion acceleration [1] RPA-LS theoretically has the most favorable scaling with laser parameters, so that energies per nucleon exceeding 100 MeV are within reach using present-day lasers. In optimal conditions such high-energy ions would be produced as high-density, charge neutralized bunches with narrow energy spectra, fulfilling Veksler's "coherent acceleration" paradigm. However, so far experiments have provided at best preliminary evidence of the onset of the light sail regime, making several issues apparent such as target stability and the onset of "relativistic" transparency. In this talk we b!
riefly review the RPA light sail concept (going beyond the simple "moving mirror" picture [2], report and comment on recent experimental results and discuss expectations based on large scale simulations [3].

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**Primary author:** Dr MACCHI, Andrea (CNR, Istituto Nazionale di Ottica, u.o.s Adriano Gozzini, Pisa, Italy)

**Presenter:** Dr MACCHI, Andrea (CNR, Istituto Nazionale di Ottica, u.o.s Adriano Gozzini, Pisa, Italy)

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