

## Looking for a PhD Position? Need a Master Project?

You are interested in

Lasers

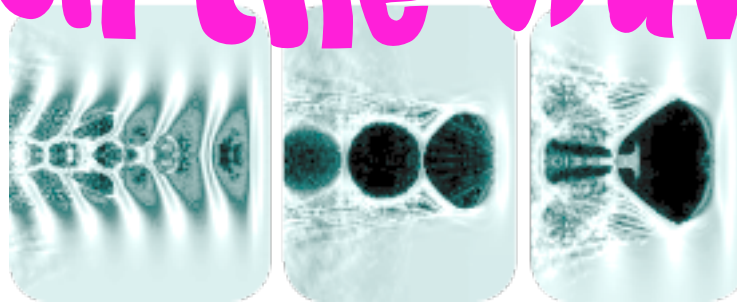
Plasma

X-rays

?

Particle Acceleration

# Catch the Wave



Particle-in-cell simulation of a laser-driven plasma wave, with injected electrons (right frame)

In a plasma wave that is driven by a high-intensity laser pulse electrons can be accelerated to GeV energies within centimeters. These highly relativistic electrons can be used to generate extremely directed, brilliant, ultra-short X-ray pulses (Thomson scattering, betatron radiation). This concept beats conventional accelerators and X-ray sources in size by more than three orders of magnitude which allows for the usage in routine medical applications (e.g. high-resolution phase-contrast imaging of tumors). Furthermore, the unprecedentedly short pulse length enables time-resolved probing of ultra-fast processes.

Positions are available for experimental work on electron acceleration, X-ray generation, time-resolved pump-probe experiments, ..., and for more theoretical work based on large-scale simulations.

For more information check  
<http://www.attoworld.de/karsch-group/>



Already interested?  
Just sent an email to  
Prof. Karsch: [stefan.karsch@mpq.mpg.de](mailto:stefan.karsch@mpq.mpg.de) or  
Dr. Popp: [antonia.popp@physik.uni-muenchen.de](mailto:antonia.popp@physik.uni-muenchen.de)



Detailed phase-contrast image of a fly from an all-optical laser driven betatron source