Mo-12.

Laser safety at high profile laser facilities

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Laser safety has been an active concern of laser users since the invention of the laser. Formal standards were developed in the early 1970's and still continue to be developed and refined. The goal of these standards is to give users guidance on the use of laser and consistent safety guidance and requirements for laser manufacturers. Laser safety in the typical research setting (government laboratory or university) is the greatest challenge to the laser user and laser safety officer. This is due to two factors. First, the very nature of research can put the user at risk; consider active manipulation of laser optics and beam paths, and user work with energized systems. Second, a laser safety culture that seems to accept laser injuries as part of the graduate student educational process. The fact is, laser safety at research settings, laboratories and universities still has long way to go.

Major laser facilities have taken a more rigid and serious view of laser safety, its controls and procedures. Part of the rationale for this is that these facilities draw users from all around the world presenting the facility with a work force of users coming from a wide mix of laser safety cultures. Another factor is funding sources do not like bad publicity which can come from laser accidents and a poor safety record. The fact is that injuries, equipment damage and lost staff time slow down progress. Hence high profile/large laser projects need to adapt a higher safety regimen both from an engineering and administrative point of view. This presentation will discuss all these points and present examples.

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Mo-13.

Spectral coherent combination of ultrashort pulses

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The coherent beam combination was chosen in several laser systems, including ELI, as a solution to increase the final attainable intensity. However, the coherent beam combination it is also a difficult technique while it has to combine coherently in space and in time several beams amplified in different laser chains. That means in particular that the beams should be in phase in every point of the amplified beam so the spatial beam profiling techniques have to be mastered with high accuracy for all the combined beams.

Here it is proposed an alternative coherent beam combination than the use of identical ultrashort pulses. The idea is to spectrally combine laser pulses with complementary spectra.

Collinear and non-collinear approaches have been modelled. Ongoing experimental development, including the demonstration of the rephasing for two spectrally complementary ultrashort pulses will be presented.

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