

Possible options to consider in addition to the baseline configuration of EuPRAXIA accelerator

Dear EuPRAXIA colleagues

At the Design and Science Event this June, we will be presenting EuPRAXIA to potential users and others. Shortly after that, WP7 will organize a mini-workshop for potential users of the beam foreseen for high energy physics and other applications. Although needs of high energy physicists are known relatively well and the baseline configuration of the accelerator basically fits these needs, one cannot say the same about other applications. In order to maximize the number of applications and users, it would be good to be able to consider also options a little different from the baseline configuration. For example, if we would allow for synchronized two independent laser beams, one laser could drive the FEL as in the baseline configuration and the other, directed to the FEL target, could be used to heat the target, for example creating a shock wave; This second laser beam could be provided either as a "target zone commodity" or as a true second multi-100Tw short pulse laser depending on the user requirements. Thus, for example, some astrophysical processes could be studied. Similarly, one could imagine directing an independent electron beam to the FEL target. Such a configuration, with two lasers and two plasma target areas, would open the opportunity to develop a genuine two-stage acceleration after an injector.

As WP7 needs to start looking for potential users now, it would be very good to have a discussion on design options at the Steering Committee meeting in February, and possibly a decision at the following meeting. Then, if the outcome would be positive, we could start immediately discussing these options with potential users, getting their feedback on their needs. They even might suggest a configuration (or parameters) not considered so far or, even better, unique. This, in turn, would help us to finalize EuPRAXIA design which might – as has been agreed in the kickoff meeting – not necessarily be identical with the one in the grant application.

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