



## Status Report for May 2006

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Monthly budget, schedule and technical status report for the Memorandum of Understanding between SLAC and UCLA titled:

### **Technical Addendum D to the Memorandum of Understanding between the Stanford Linear Accelerator Center and the University of California at Los Angeles**

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## Budget and Schedule Status

### ***WBS Task Deliverable Reporting***

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The WBS task deliverables and budget are defined by the MOU as shown in table 1.

WBS Number	Task Deliverables	Fund Type	Budget (K\$)	EDIA (K\$)	M & S (K\$)
2.1.1.8	FEL Physics Analysis	R & D	173.7	155.5	18.2

Table 1 WBS Deliverable Definition

Progress on each WBS task for the reporting month **May, 2006** is shown in table 2.

WBS Number	Task Deliverables	% Task Complete	% Budget Used	Scheduled Completion Date	Expected Completion Date
2.1.1.8	FEL Physics Analysis	35	23	Sep 2006	Sep 2006

Table 2 WBS Deliverable Status

## Technical Status and Planning for 2.1.1.8

### ***This Month***

The work has been focused on the calculation of transverse coherence. Several methods have been tested. One piece of information is the effective waist size, divergence and position of the FEL radiation at the end of the undulator. The calculation shows a rather strong fluctuation in the effective waist position about 20-40 m before the undulator exit. Another property to indicate transverse coherence is the modeling of diffraction experiments. However this approach turned out to be not suitable, because it mixes longitudinal and transversal coherence information with each other and the calculations are very time intensive. The alternative approach is to calculate mutual intensity function (see e.g. Goodman 'Statistical Optics'). Still this approach demands a large amount of computational time.

### ***Next Month***

- Continue coherence properties for LCLS pulse
- Extending the code SPUR to include strong focusing and emittance effects