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## Analyses Supporting the 2-Color Upgrade to the IR FEL at FHI Berlin

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This paper provides a summary of the analyses that led to the definition of the 2-color upgrade of the IR FEL at FHI Berlin. We briefly cover several different aspects of the design, beginning with the beam dynamics of the second far-IR beamline, engineering considerations of that physics design, and the FEL physics that defined the short-Rayleigh range undulator as well as aspects of the undulator design itself. Additionally, we touch on the approach to 2-color commissioning with pulse picking, as well as considerations for the far-IR optical transport to users. The status of commissioning is described in a parallel paper at this Conference by W. Schöllkopf et al.

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Yes

**Primary author:** TODD, Alan (AMMTodd Consulting)

**Co-authors:** COLSON, William (WBC Physics); DOWELL, David (SLAC National Accelerator Laboratory); GOTTSCHALK, Stephen (STI Magnetics LLC); RATHKE, John (JW Rathke Engineering Services); SCHULTHEISS, Thomas (TJS Technologies); YOUNG, Lloyd (LMY Technology); SCHÖLLKOPF, Wieland (Fritz-Haber-Institut der Max-Planck-Gesellschaft); DE PAS, Marco (Fritz-Haber-Institut der Max-Planck-Gesellschaft); GEWINNER, Sandy (Fritz-Haber-Institut der Max-Planck-Gesellschaft); JUNKES, Heinz (Fritz-Haber-Institut der Max-Planck-Gesellschaft); MEIJER, Gerard (Fritz-Haber-Institut der Max-Planck-Gesellschaft); VON HELDEN, Gert (Fritz-Haber-Institut der Max-Planck-Gesellschaft)

**Presenters:** TODD, Alan (AMMTodd Consulting); COLSON, William (WBC Physics); DOWELL, David (SLAC National Accelerator Laboratory); GOTTSCHALK, Stephen (STI Magnetics LLC); RATHKE, John (JW Rathke Engineering Services); SCHULTHEISS, Thomas (TJS Technologies); YOUNG, Lloyd (LMY Technology); SCHÖLLKOPF, Wieland (Fritz-Haber-Institut der Max-Planck-Gesellschaft); DE PAS, Marco (Fritz-Haber-Institut der Max-Planck-Gesellschaft); GEWINNER, Sandy (Fritz-Haber-Institut der Max-Planck-Gesellschaft); JUNKES, Heinz (Fritz-Haber-Institut der Max-Planck-Gesellschaft); MEIJER, Gerard (Fritz-Haber-Institut der Max-Planck-Gesellschaft); VON HELDEN, Gert (Fritz-Haber-Institut der Max-Planck-Gesellschaft)

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