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# Semianalytic code for I/O mode cleaners design

*Tuesday, 24 October 2023 13:35 (5 minutes)*

In this poster I will present semi-analytic code designed to simulate modal propagation and coupling of Hermite-Gauss laser modes in and out of the Input and Output mode cleaner cavities that will be used on R&D and 3G detectors. Outputs from the code are graphical plots that serve as heuristic tools for narrowing down choices of cavity parameters (RoC, L, Finesse, internal angles etc.). The code is based on a modal decomposition of HG modes and expansion procedure, that is valid up to second order, for HG beams and as varying parameters has Finesse of cavity, internal angles and cavity geometry, mode mismatch, misalignment etc. Short overview of ideas behind the code will be presented along with some graphical results and their interpretation.

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