# Modification of a BVODE code for large BVODE systems arising from the Transverse Method-Of-Lines

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In the classic method-of-lines approach one treats a system of parabolic or hyperbolic partial differential equations (PDEs) by discretizing the spatial dimensions, yielding an often large system of initial value ordinary differential equations (IVODEs). A significant advantage of this approach is that one then has access to a wide array of efficient, robust, carefully tested IVODE software for the treatment of solve the IVODE system. Considering the case of a system of parabolic or hyperbolic PDEs with one spatial dimension and one time dimension, there is the possibility of applying a discretization to the time dimension, yielding a system of boundary value ODEs (BVODEs) - this is the transverse method-of-lines. This approach allows one to treat the system of BVODEs by selecting from among several high quality software packages for the handling such systems. However, these packages are generally not able to handle, in an efficient manner, the large, sparse BVODE systems that arise. In this talk we discuss some preliminary work on software modifications required to improve the performance of a BVODE solver to allow for the efficient treatment of large, sparse boundary value ODE systems, within the context of the transverse method-of-lines.