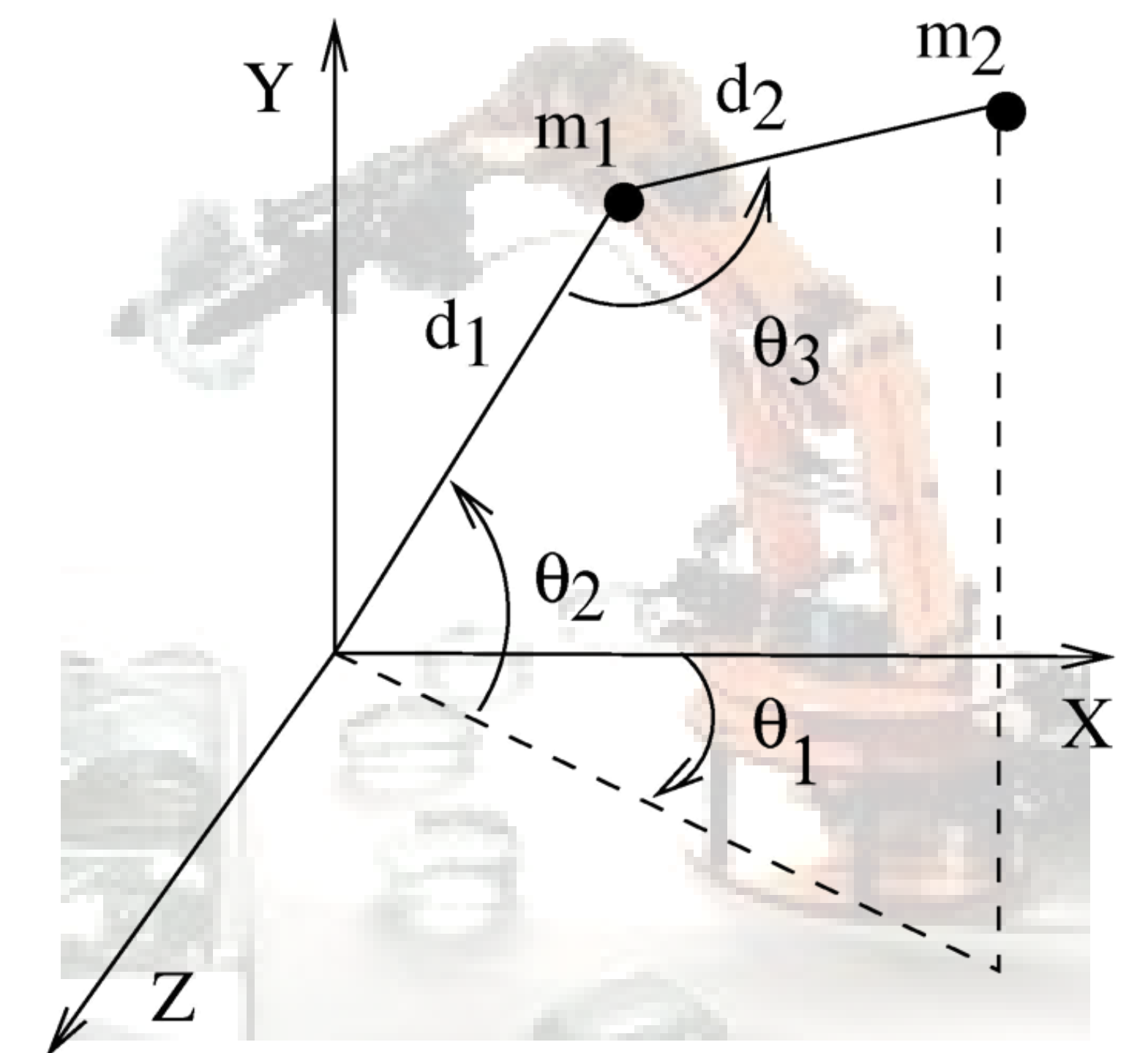




Semi-Infinite Programming (SIP)

National leading research in semi-infinite programming :

- Continue improving and enlarging the open source software
- Improve efficiency of reduction type methods
- Analyse theoretical properties of merit functions in reduction methods to evaluate solution quality
- Continue addressing practical problems in robot trajectory planning, air pollution and fed-batch control



Research Team

E.M.G.P. Fernandes (U Minho)
A.I.F. Vaz (U Minho)
A.I.P.N. Pereira (Polytechnic Institute of Bragança)
A. Mota (PhD student, Polytechnic Institute of Porto)

Research funding

POCI/MAT/58957/2004 in progress (12.000€).

Publications

- Vaz, A.I.F.; Fernandes, E.M.G.P.; Gomes, M.P.S.F., An interior-point method for semi-infinite programming, **Optimization Methods and Software**, V. 18 (6), 673-687, 2003
- Vaz, A.I.F.; Fernandes, E.M.G.P.; Gomes, M.P.S.F., A Sequential quadratic method with a dual parameterization approach to nonlinear semi-infinite programming, **TOP** 11(1), 109-130, 2003.
- Vaz, A.I.F.; Fernandes, E.M.G.P.; Gomes, M.P.S.F., SIPAMPL: Semi-Infinite Programming with AMPL, **ACM Transactions on Mathematical Software**, V. 30 (1), 47-61, 2004.
- Vaz, A.I.F.; Fernandes, E.M.G.P.; Gomes, M.P.S.F., Robot Trajectory planning with semi-infinite programming, **European Journal of Operational Research** 153(3), 607-617, 2004.
- Vaz, A.I.F.; Ferreira, E.C., Semi-infinite air pollution control problems, **XXVIII Congreso Nacional de la SEIO**, CDROM, ISBN 84-689-0438-4, Cádiz 2004.
- Vaz, A.I.F.; Fernandes, E.M.G.P., A New Interface between SIPAMPL and MATLAB to Solve Semi-Infinite Programming Problems, **WSEAS Transactions on Information Science and Applications**, Issue 12, Vol. 3, 2331-2338, 2006.
- Vaz, A.I.F.; Ferreira, E.C.; Mota, A.T.M., Fed-batch trajectory optimal control problems with cubic splines, **WSEAS Transactions on Systems and Control**, Issue 2, Volume 1, ISSN 1991-8763, 207-213, 2006.
- Vaz, A.I.F.; Fernandes, E.M.G.P., Tools for robotic trajectory planning using cubic splines and semi-infinite programming, **Lectures Notes in Economics and Mathematical Systems**, Vol. 563, Springer-Verlag, 399-413, 2006.
- Pereira, A.I.P.N.; Fernandes, E.M.G.P., forthcoming. A reduction method for semi-infinite programming by means of a global stochastic approach, **Optimization**, 17 pp, 2007.



Software

SIPAMPL – Software (environment and problems database) for SIP with interface to AMPL.

NSIPS – Solver for SIP with interface to AMPL freely available. Also available in the NEOS server.

