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Educational Curriculum	1990 BSc, University of Malawi 1992 MSc, University of London 1992 DIC, Imperial College 1997 MSc nat, Kaiserslautern University of Technology 2004 PhD, Darmstadt University of Technology
Professional Experience	1991-1993 Application Systems Development Analyst, Business Computer Services, Malawi 1993 – 2004 Lecturer of Mathematics, University of Malawi 2005 – 2007 Lecturer of Mathematics, University of KwaZulu-Natal 2008 – 2011 Associate Professor of Computational and Applied Mathematics, University of the Witwatersrand 2012 – 2014 Professor of Applied Mathematics, University of Stellenbosch
Current research interest	- Numerical and Computational Methods - Kinetic Models - Nonlinear Optimization - Partial Differential Equations - Inverse Problems Applications - robotics - compressible and incompressible flow - networked flow -
Research methods	- Mathematical analysis, Numerical Analysis, Scientific Computing
Publications	MK Banda, M Herty, A Klar, Gas flow in pipeline networks, NHM, 1(1), pp 41-56 (2006). M.K. Banda, M. Herty, J.-M. T. Ngnotchouye}, Towards a mathematical analysis for drift-flux multiphase flow models in networks, SIAM J. Sci. Comput., 31(6), 4633 - 4653 (2010), DOI:10.1137/080722138. M.K. Banda, A.-S. Haeck, M. Herty}, Numerical discretization of coupling conditions by high-order schemes, J. Sci. Comput. (2016) 69(1): 122 - 145. doi:10.1007/s10915-016-0185-x

Modelling of natural gas flow on networked domains

In this talk, we present mathematical analysis, numerical analysis and some scientific computing involved in the study of natural gas flow in networked domains. The flow in the network links is modelled using nonlinear hyperbolic partial differential equations. Firstly, a discussion of well-posedness of coupling conditions at the network junctions will be discussed. To solve the coupling problem at the junction a generalised Riemann problem is solved. Further, a discussion of a numerical analysis of the numerical discretisation of the coupling conditions at the junction will be presented. The computational results will be discussed alongside theoretical results.