

Abdou K. Drame* (abdoukhadry.drame@[omit]unlv.edu), Department of Mathematical Sciences, University of Nevada, Las Vegas; and **David Costa** (costa@[omit]unlv.nevada.edu), Department of Mathematical Sciences, University of Nevada, Las Vegas, *On the Existence of Positive Solutions of Semi-Positone Systems of Equations*.¹

Abstract. Semi-positone problems arise in a variety of situations in the theory of nonlinear diffusion generated by nonlinear sources and in population biology models. It is of interest to study the existence of positive (or nonnegative) solutions of semi-positone systems, since in most applications, the solutions of such systems represent concentrations, temperatures, or densities and so have to be nonnegative. As noted in [L82], the study of the existence of such solutions when the nonlinearity is negative near the origin is challenging. We prove existence of positive solutions of systems of semi-positone equations by using phase plane analysis and functional analytic tools. This talk is based on the speaker's joint work [DC07] with David G. Costa.

[DC07] A.K. Drame and D.G. Costa, "Some new results on the existence of positive solutions of semi-positone systems of equations," in preparation.

[L82] P.-L. Lions, "On the existence of positive solutions of semilinear elliptic equations," *SIAM Review*, Volume 24, Number 4, pp. 441–467, October 1982.

Biographical Sketch. Abdou K. Drame received his M.S. in Mathematics in 2001 from University Gaston Berger of Saint-Louis in Senegal. He received his Ph.D. in Mathematics in 2005 from University Montpellier II in France under the direction of Claude Lobry. Since August 2006, he has been a visiting assistant professor at University of Nevada, Las Vegas.

¹The [omit] should be omitted when sending email. It was included here to avoid automatic "harvesting" by spam-list makers.