Subject: Invitation letter is attached
Date: Saturday, March 1, 2014 at 18:42:40 Central Standard Time
From: Craig ZumBrunnen
To: Shvartsman, Mikhail M.

UW

Department of Geography

February 28, 2014

Dr. Mikhail "Misha" Shvartsman
Department of Mathematics
OSS 201
University of St. Thomas
2115 Summit Avenue
Saint Paul, Minnesota 55105
mmshvartsman@stthomas.edu

Dear Dr. Shvartsman,

A number of faculty members from several University of Washington Departments and Colleges, mostly members of the interdisciplinary Program on Climate Change group, would like to invite you to visit the University of Washington on the days of April 3rd and April 4th to present a seminar talk on your work modeling tornados as well as to meet with individual faculty and graduate students interested in your mathematical modeling work. Interested faculty include members from the Applied Math, Atmospheric Sciences, Oceanography, Mechanical Engineering, and other units on campus with interests in modeling atmospheric processes. If you would be willing to visit us on the above noted dates, then I will assemble a more detailed list of faculty members for you to meet with during your visit. Most likely, your seminar talk would be given in a classroom or seminar room either at the Department of Atmospheric Sciences or at the Program on the Environment.

Sincerely your,

Dr. Craig ZumBrunnen
Department of Geography
412E Smith Hall
University of Washington
Seattle, WA 98052
craigzb@uw.edu

Subject: Guest Lecture/Seminar, Room 120 ACC or Michael Wallace Hall on Thursday, April 3, 2014. 12:30 -1:20

Date: Friday, March 28, 2014 at 13:22:36 Central Daylight Time

From: Craig ZumBrunnen

To: pcc_seminars@uw.edu, cliff@atmos.washington.edu, david@atmos.washington.edu, ktung@uw.edu, ghakim@uw.edu

CC: ferrante@aa.washington.edu, rileyj@uw.edu

Please forward to anyone whom you think would be interested in applied math research on tornadoes.

Thanks,

Craig ZumBrunnen
Geography faculty

Guest Lecture/Seminar, Room 120 ACC or Michael Wallace Hall on Thursday, April 3, 2014, 12:30 -1:20

"Alternate powers in Serrin's swirling vortex solutions"

Presenter: Dr. Mikhail M. Shvartsman Assoc. Prof., Department of Mathematics, University of St. Thomas, St. Paul, MN.
(other Co-authors, Pavel Bělík, Douglas P. Dokken , Kurt Scholz)

Abstract: We consider a modification of the fluid flow model for a swirling vortex developed by J. Serrin, where velocity decreases as the reciprocal of the distance from the vortex axis. Recent studies, based on radar data of selected severe weather events, indicate that the angular momentum in a tornado may not be constant with the radius, and thus suggest a different scaling of the velocity/radial distance dependence. Motivated by this suggestion, we consider Serrin's approach with the assumption that the velocity decreases as the reciprocal of the distance from the vortex axis to the power b with a general b>0. This leads to a boundary-value problem for a system of nonlinear differential equations. We analyze this problem for particular cases, both with nonzero and zero viscosity, discuss the question of existence of solutions, and use numerical techniques to describe those solutions that we cannot obtain analytically.