

SAFAK OZKAN

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EDUCATION:

- **Master of Science** January 2003 – May 2007
Cornell University - Ithaca, NY
Department of Civil and Environmental Engineering
RESEARCH AREA: Wave Mechanics, Turbulence Modeling
Advisor: Prof Philip Liu
RESEARCH AREA: Structure of Stratified Turbulence, Secondary Turbulence
Advisor: Assist. Prof. Peter Diamessis
- **Master of Science** September 2000 – December 2002
Bosporus University – Istanbul, Turkey
Department of Civil Engineering
CONCENTRATION: Coastal Engineering, Computational Fluid Dynamics
THESIS TITLE: “A Stochastic Model of Tanker Traffic Through The Strait of Istanbul”
Advisor: Assist. Prof. Emre Otay
- **Bachelor of Science** September 1995 – December 1999
Bosporus University – Istanbul, Turkey
Department of Civil Engineering
SENIOR PROJECT: “Design and Analysis of Retrofitting Existing Reinforced Concrete Structures with Fiber Reinforced Plastics (FRPs)”

WORK & RESEARCH EXPERIENCE:

- **Earthquake Engineer and Computer Modeler/Programmer** August 2000 – November 2001
Ditek A.S., – Istanbul, Turkey
 - Took part in the founding of a Civil Engineering Start-Up Company in the wake of the 1999 Marmara Earthquake. Effectively used a Nonlinear Finite Element Modeling software (SAP 90) to perform the seismic modeling, analysis and design of the retrofit projects of existing buildings in the Istanbul area.
- **Graduate Research Assistant** September 2001 – December 2002
Bosporus University – Istanbul, Turkey
Department of Civil Engineering
 - Designed a stochastic model of vessel traffic through a narrow and winding waterway with non-uniform surface currents. The random variables regarding the surface current conditions and the pilotage errors were incorporated through a Gaussian distribution. The model eventually produced a Risk Map for tanker accidents along the Strait of Istanbul, which strongly correlated with the observed data. This work was featured in a national newspaper as a one-page long article in 2004.

- **Teaching Assistant**
Cornell University - Ithaca, NY
Department of Civil and Environmental Engineering

 - Composed problems and taught recitation sessions weekly.
 - Conducted laboratory sessions and supervised experiments.
 - Held office hours weekly.

June 2003 – July 2003, June – July 2004

- **Graduate Research Assistant**
Cornell University - Ithaca, NY
Department of Civil and Environmental Engineering

Research Assistant in the group of Prof. Philip Liu
RESEARCH AREA: Wave Mechanics, Turbulence Modeling

 - Developed a numerical method for conformal mapping that produces the coordinate transformation functions between a boundary-fitted curvilinear coordinate system and a Cartesian system. The algorithm calculates the coordinate transformation functions smoothly up to their 2nd derivatives. (*Spectral Method, Finite Difference Method*; FORTRAN 90 and MATLAB)
 - Developed a numerical model for a 2D oscillatory turbulent boundary layer flow over a rippled bottom. The code incorporates the boundary fitted curvilinear coordinate system and a $k - \varepsilon$ turbulence model. (*Finite Difference Method*; FORTRAN 90)

Research Assistant for Assist. Prof. Peter Diamessis
RESEARCH AREA: Structure of Stratified Turbulence, Secondary Turbulence

 - Developed a post-processing module for an existing DNS code to perform statistical analyses and to visualize the coherent structures in stratified wake turbulence. This work quantitatively demonstrated and explained the generation of secondary turbulence and the energy transfer mechanism of high Re stratified turbulence for the first time. (FORTRAN 90, *Parallel Computing*)

June 2003 – May 2007

- **Recording Artist and Performer**
Ithaca, NY

 - Composed, arranged and recorded music privately and collaboratively. Took part in recording and publishing of two records. Performed in upstate New York, Massachusetts and the surrounding areas on a weekly basis, at New York City on a monthly basis. Played yearly at music festivals (Grassroots - NY, Floyd Fest - PA etc.) to a maximum of 4000 people at a time. Toured two times across the U.S.

October 2006 – May 2010

PUBLICATIONS:

- Ozkan S. and Diamessis P. J., "Spectral Signature of Turbulence in High Reynolds Number Stratified Wakes" (2006), Proceedings of 6th International Conference on Stratified Flows, Perth, Australia.
- Otay, N.E., and Ozkan, S., "Stochastic Prediction of Maritime Accidents in the Strait of Istanbul" (2003), Proc. of the 3rd Intl. Conf. on Oil Spills in the Mediterranean and Black Sea Regions, Sep 2003, p92-104.
- Otay, N.E., and Özkan, Ş. (2005) "Risk Map for the Strait of Istanbul" Proc. of the 5th Natl. Conf. on Coastal Engineering, May 2005, p19-32. (in Turkish)