

# A Proposal for a Visiting Libra Diversity Professorship

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## 1 About the Applicant

Professor Prellberg is currently a Reader (permanent Associate Professor) at Queen Mary, University of London. He would like to spend his sabbatical as a Visiting Libra Diversity Professor at the University of Maine, where he proposes to continue an ongoing collaboration with Professor Peter Kleban (Physics and LASST) and interact with Professors R. Dean Astumian (Physics) and David Bradley (Mathematics). He will work with Professor Gisela Hoecherl-Alden (Modern Languages and Classics) both in the capacity of bringing his multicultural experiences to pre-service teachers and to aid students of German with their language skills and, more importantly, with cultural learning. He will also participate in other diversity and education related activities as described below.

## 2 Criteria for Evaluation

### 2.1 Suitability/Qualifications

In addition to his permanent position in London, Thomas Prellberg holds a professorial title at Clausthal University of Technology in Germany and is Associate Investigator at the Centre of Excellence in Mathematics and Statistics of Complex Systems in Melbourne, Australia. He is author of more than 60 publications, and a frequent speaker at international conferences.

Besides his native Germany, Professor Prellberg has lived and worked in Israel, Australia, Norway, the United States, and the United Kingdom and has first-hand experience of the needs of both under-graduate and graduate students in each of these countries. This background has proved to be especially fruitful at his present position, as the majority of students at Queen Mary are first- or second-generation immigrants from a number of different countries.

### 2.2 Contribution to Diversity

Professor Prellberg has extensive experience teaching an ethnically and culturally diverse student body. In addition to having twenty percent of students from outside the United Kingdom, Queen Mary is dominated by immigrant communities from a number of different countries, notably Bengali students from India and Bangladesh. Further, there is a wealth of different religions, with Islam being a leading minority. This raises issues for a university teacher, such as having

to be aware of the needs of students who are in the process of negotiating their own cultural and religious identity.

Professor Prellberg is experienced in the challenges to learning in such an academic environment. His presence at the University of Maine supports academic programs dedicated to multiculturalism, as detailed below.

### **2.3 Impact on Strategic Plan**

Professor Prellberg's visiting professorship will be especially beneficial in the areas of strengthening research (strategic goal 5) and supporting and enhancing diversity (strategic goal 8).

### **2.4 Purposes of the Libra Professorship**

This proposal builds, enhances, and provides recognition for multicultural activities (see 3.1), cultural awareness in the University of Maine community (see 3.2 and 3.3), computer-based teaching methods (see 3.4), outreach activities (see 3.5), research in Biophysics, Physics, and Mathematics (see 3.6, 3.7, and 3.8), and graduate training in Mathematics (see 3.9). These activities also promote excellence in the areas mentioned, thus building and providing recognition for several programs at the University of Maine. Overall, Professor Prellberg's presence will be of considerable benefit to the University.

## **3 Proposed Activities**

### **3.1 Participation in Multiculturalism and Diversity Initiatives**

As outlined above, Professor Prellberg has extensive teaching experience in different countries and is currently teaching at Queen Mary, which is in London's ethnically diverse East End.

This is reflected in the student body, as illustrated by the following examples. As immigrant families tend to be conservative, gender issues are highly relevant. While some female students have become fully westernized, others still live at home in a closely monitored environment and need to be provided with official appointments even to see their academic advisor. In addition to cultural issues, students frequently face potentially obstructive language-related learning issues, even in the field of mathematics, and in response to this challenge Queen Mary has created a course "Mathematical Writing". Other issues include identification of students wearing burkhas during exams, or students missing classes due to participation in the hajj. Because of experiences like these, Professor Prellberg is well-qualified to share with the University of Maine community his knowledge of and experience with the challenges and rewards related to teaching in a multicultural setting.

Professor Gisela Hoecherl-Alden, who directs Project Opportunity - a teacher training grant for English as a Second Language instructors - teaches a course on Multiculturalism and Diversity (ELL 491). She has agreed to collaborate with Professor Prellberg to offer workshops and classroom presentations for pre-service teachers and prepare them to succeed in Maine's school districts with large immigrant communities. In addition, Professor Prellberg will be available to work with Professor Jane Smith, who teaches MLC 466: Teaching Modern Languages, a course required of all pre-service language teachers for state certification, during which he will relate his experiences of teaching in diverse classrooms and discuss issues of language policy and diversity in the European Union.

### **3.2 German**

Professor Prellberg is planning to conduct several sessions for students with German language skills, with a focus on investigating cultural differences. In the Fall, Professor Hoecherl-Alden teaches GER 307: German for the Professions, which attracts a large number of students from the Colleges of Engineering and Business. These students hope to utilize their foreign language skills to find jobs in the global economy upon graduation and could therefore benefit from cultural awareness training. In addition, all students pursuing an International Affairs degree, who have at least intermediate-level knowledge of German will be invited to attend Professor Prellberg's training sessions. The idea for these sessions arose in discussion with Professor Hoecherl-Alden.

### **3.3 Higher Education Issues in the EU**

During recent years, the Bologna process has started to transform European higher education by making academic degree standards and quality assurance standards more comparable and compatible throughout Europe. The impact of this on the student market is felt internationally, and even universities as far away as Australia are positioning themselves in response. An informal session will be arranged during which Professor Prellberg will be available to discuss some of the ramifications of this with interested faculty. This might also be of interest to the University's "Maine-France-Québec" Initiative, and he anticipates collaborating with the Canadian-American Center on this as well.

### **3.4 E-Learning in First-Year Teaching of Calculus (Center for Mathematics and Science Education Research)**

Recently, Professor Prellberg piloted the introduction of a significant e-learning component into first-year mathematics teaching at Queen Mary, and has presented his experience in several lectures such as "Improving Student Performance with Web-Based Learning and Assessment" and "Automatic Assessment and Feedback". One unexpected benefit of this new method of teaching has been measurable improvement in foreign students' learning, as well as synergetic effects with traditionally taught courses. He is keen to expand upon the benefits and drawbacks of this latest technology with interested faculty at the University of Maine, and would be willing to work in conjunction with the Center for Teaching Excellence on presenting workshops for faculty members.

### **3.5 Outreach Activities**

Professor Prellberg will present a lecture on "The Magic of Numbers: Infinite Sums in Mathematics and Physics", suitable for a mathematically interested lay audience. He would also be happy to participate in outreach activities pertaining to Multiculturalism with Project Opportunity.

### **3.6 Research with Professor Peter Kleban (Physics and LASST)**

Professor Prellberg has an ongoing research collaboration with Professor Peter Kleban on Number-Theoretic Spin Chains. This has resulted in one publication with an additional paper near completion, and ample scope for follow-up work. It is expected that at least two further scientific publications will be submitted during this visit.

### **3.7 Research with Professor David Bradley (Mathematics)**

Some aspects of the work on the afore-mentioned spin chains pose questions in number theory and have ramifications for special functions (generalizations of  $\zeta$ -functions). Here, collaboration with Professor David Bradley should prove fruitful.

### **3.8 Research with Professor R. Dean Astumian (Physics)**

Professor Prellberg has initiated research on a model of protein motion proposed by Professor Astumian. The model involves random walks, a subject on which Professor Prellberg has done considerable research. This visit will allow time for work on the project to progress considerably.

### **3.9 Seminar series on Selected Topics of Algebraic Combinatorics (Mathematics)**

Professor Prellberg proposes to give a series of lectures based on those given at the 2008 summer school “Combinatorics and Statistical Mechanics” at the Erwin Schrödinger Institute in Vienna, Austria. These lectures will offer a unique opportunity for students and faculty to receive an introduction into a research area not traditionally represented at the University of Maine.

### **3.10 Further Activities**

Professor Prellberg has been invited to present a lecture at a sectional meeting of the American Mathematical Society in Vancouver in October.

## **4 Budget**

Professor Prellberg proposes to be at the University of Maine from August through December 2008, accompanied by his wife and two children. As set out in the J1 Exchange Visitor visa requirements, financial support is set at a minimum of \$1500 per month with an additional \$400 per month per dependent.

- \$13500 Support (\$2700/month for five months)
- \$1500 Air travel London-Bangor (Professor Prellberg only)