Maria Ratcheva

I was born in Bulgaria, but I immigrated to Canada four years ago, and I now am a Canadian citizen. I fell in love with Mathematics when I was twelve years old. In 1986 I won a prize from the National Mathematics Olympiad, and was honoured to be admitted to a Secondary School, with a concentration in mathematics, without an admission exam. In 1990 I was enrolled in the Sofia University, Bulgaria, Faculty of Mathematics and Computer Science.

As a student in the forth academic year, I wrote a course paper on an important problem in hydrodynamics, namely: "The flow field induced by high-frequency oscillations of a spherical container containing a double emulsion." This is an application of the method of matched asymptotic expansions. Until then, only the case of oscillations of a spherical container containing a fluid drop was studied. The method of matched asymptotic expansions is a method where the solution of the equation of motion of the fluid is sought expanding two asymptotic rows: inside and outside the boundary layer. Both expansions match after the boundary transition for additional fixing of the unknown coefficients is done. Very interesting pictures of the motion of the three fluids in the oscillating container were obtained. I made also an effort to analyze the behaviour of the fluid when adding an electrical field. My diploma paper was entitled: "Polynomial Lax pairs in the next terms in the hierarchies of the Landau-Lifshitz equation and the system of chiral fields". The subject of my diploma paper was the introduction of new Lax pairs. In my diploma paper, I have introduced new Lax pairs, polynomial in the spectral parameter.

As a result of all my achievements, I won a one-year assistantship and worked as a Professor's Assistant at McGill University, Montreal. There, I read a lot of papers in the field of differential geometry, differential equations and methods of integration of non-linear differential equations based on the inverse scattering problem. After my maternity leave, I entered the work force in the field of Internet programming and eBusiness. I master client/server applications and network technologies. I developed a client/server application in Java for analysis and statistics of the quality of video presentations in the client's machines. I also participated in the development of the virtual shopping center. I believe that mathematics is a wonderful and very powerful science. I do everything I can to apply mathematical methods toward human benefits.

I am currently working for a company with 24 bookstores in Montreal, helping them to organize their database so they could use the information more efficiently.