L'Université de Barcelone —fondée en 1450—, en concédant à Jean-Pierre Serre le titre de docteur *honoris causa*, se joint aujourd'hui aux universités de Cambridge (1978), Stockholm (1980), Glasgow (1983), Athènes (1996), Harvard (1998), Durham (2000), Londres (2001), Oslo (2002), Oxford (2003) et Bucarest (2004) qui, depuis 1978, se sont honorées en reconnaissant sa qualité scientifique et humaine.

Professeur Serre, merci.

Pilar Bayer
UB

## Xavier Tolsa received a prize at 4ECM

Several prizes are awarded at the European mathematical congresses, held every four years, to young mathematicians in recognition of particularly relevant contributions. At the 2004 European Congress, held in Stockholm, a prize was awarded to Xavier Tolsa, an ICREA analyst attached to UAB. The only Catalan mathematician to have won such a prize before Xavier Tolsa is Ricardo Pérez-Marco, who was awarded his prize at the 1996 European Congress in Budapest for having solved several conjectures (by Arnold, Sad, Siegl, Moser and others) in dynamic systems. The work for which Tolsa was awarded the prize is an article [To1] published in the Swedish journal, *Acta Mathematica*, which is known as one of the best in the world. In this article he solves the problem of the semi-additivity of analytic capacity, posed in 1966 in an influential article by Vitushkin. The work is the brilliant culmination of a series of prior contributions by several mathematicians. David, Journée and Semmes (from the school of Yves Meyer, one of the creators of wavelet theory), Christ (Berkeley), Nazarov, Treil and Volberg (Saint Petersburg), Melnikov and Vitushkin (Moscow), Jones (Yale), Mattila (Helsinki) and Mateu and Verdera (Barcelona). Since one of Tolsa's main results can be expressed very easily in terms intelligible to any graduate, we provide it below.

The question involves analytical functions on the plane. Remember that Riemann showed that if a function $f$, analytic in a disc, except perhaps at its centre, has the property that the values of $f(z)$ are bounded as $z$ approaches the centre, then $f$ extends to a function analytic in the entire disc. Specifically, $f$ has a continuous extension to the centre. This is a surprising fact that strongly depends on the analyticity and the dimension, and it is obvious that the real variable analogue does not hold: the function that takes the value 1 on the interval $(0,1)$ and 0 on the interval $(-1,0)$ does not extend continuously to 0. Painlevé, a French mathematician, studied the removable sets for bounded analytic functions in his doctoral thesis of 1888. These are the compact sets $K$ of the plane, with the property that if we take an analytic function bounded at $\Omega \setminus K$, for any open $\Omega$, then the function extends analytically to all $\Omega$. Painlevé showed that every set of null Hausdorff length is removable. He thus gained a dimension over Riemann. There was considerable activity regarding the notion of removability in the first half of the last century until Ahlfors, a Finnish analyst of a strong geometric bent, asked in 1947 whether it was possible to find *geometric* characterisations of the removable sets and, in fact, called the question the Painlevé problem.

In his article (see also [MTV]), Xavier Tolsa showed that a compact $K$ is not removable if and only if it is possible to construct a positive measure $\mu$ in $K$, not null, which has the following two properties:

1. For any disc $D$, the measure of the disc does not exceed the radius:

$$\mu(D) \leq \text{radi}(D).$$

2. If $R(z,w,\zeta)$ denotes the radius of the circumference that passes through points $z$, $w$ and $\zeta$, then

$$\int\int\int \frac{1}{R(z,w,\zeta)^2}\, d\mu(z)d\mu(w)d\mu(\zeta) < \infty.$$

Any reader will be able to see clues to the importance of the above result in the fact that removability is described in terms that no longer refer to analyticity and that only involve real variable notions (measures) with geometric content (the radius $R(z,w,\zeta)$). We note, however, that it is, in principle, arguable whether the condition is geometric because it brings in the existence of a measure satisfying specific conditions. The real question is the following: is the above condition geometric in the precise sense that it is a bilipschitz invariant? Remember that a homeomorphism $\Phi$ of the plane is bilipschitz if it preserves distances modulo constants, i.e. if there exists a constant $C \geq 1$ such that:

$$C^{-1}|z-w| \leq |\Phi(z)-\Phi(w)| \leq C|z-w|, \quad z,w \in \mathbb{C}.$$

Strong evidence was presented in [GV] that this had to be true and in [To2] the invariance of the removable sets in bilipschitz geometry was confirmed, in another excellent article. The Painlevé problem can therefore be considered solved and Mathematics has lost an open problem but gained a first-rate mathematician.

$$C^{-1}|z-w| \leq |\Phi(z)-\Phi(w)| \leq C|z-w|, \quad z,w \in \mathbb{C}.$$

## References


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## Miguel de Guzmán, in memoriam

Miguel de Guzmán died suddenly in Madrid on April 14, 2004. Having had the privilege to have been his friend, I would like to share with the members of the Catalan Mathematical Society the memory of one who was undeniably a key figure in Spanish Mathematics and a good friend to Catalan mathematicians.

Miguel de Guzmán Ozámiz was born in Cartagena in 1936. He studied philosophy in Germany and Mathematics in Madrid and earned his doctorate in Chicago under the direction of Professor Calderón. He was Professor of Mathematical Analysis at the Complutense University of Madrid, a member of the Royal Academy of Sciences, Chairman of the International Commission for Mathematical Education (1991-1998) and a visiting lecturer in many countries. But apart from the details of his curriculum vitae, I would like to talk about him as a person. He was a friendly man with deep ethical convictions and a special love of his family and friends and was able to carry out intensive research into analysis and geometry while maintaining a tremendous vocation for education and the popularisation and promotion of everything surrounding the world of Mathematics. He was an extraordinarily well educated and highly trained man who devoted himself body and soul to transmitting his passion for Mathematics to the world. His goal was the future and he wanted to reserve in it a place of honour for his beloved discipline: new research subjects, the new generations that had to be trained, the social perspective that had to be improved, the progress of people, etc. He has left us trained people, articles, books and, above all, many memories with which to continue to promote his ideas.

His intense life as a lecturer, populariser and promoter of new initiatives has laid down milestones that today, in his eternal absence, serve as beacons.