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**Marcel Berger**

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## MARCEL BERGER

by Gérard BESSON & Pierre BÉRARD

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Marcel Berger passed away on October 15, 2016. A conference to pay tribute to him was organized in December 2017 at IHÉS. The present volume contains contributions by some of the invited speakers. We thank the authors for their contributions.

Quite naturally, this memorial volume is published by the *Annales de l'institut Fourier*. Indeed, Marcel greatly influenced our institute. Several of his former students hold positions there, our seminar “Théorie spectrale et géométrie” [1] was created in the early 1980’s as a partial transplantation of the “Séminaire de géométrie riemannienne” of the Université Paris 7 (now Paris-Diderot). Marcel also chaired our visiting scientific committee on several occasions in the past years.

Marcel, through his seminar and more personal interaction had a great influence on us. He would arrive at the seminar with a bunch of preprints which he would distribute around, for us to study or present at the seminar. These preprints covered a large range of topics, not limited to Marcel’s own research. As a typical example, we point out the seminar 1970-1971 which covered topics on manifolds with negative curvature [2]. After the seminar, we would have lunch and then meet in Marcel’s office for more discussions, on mathematics or à *batons rompus*. In these informal meetings, Marcel would give his appreciation on one topic or another, using one of his favorite colloquial expressions. Let us mention two of them:

- “simple et de bon goût”, simple and of good taste, usually meaning a striking result, simple to state and . . . not so easy to prove;
- “surlecutant” (according to dictio.fr: *Expression de potache signifiant littéralement: “qui met sur le cul”, qui surprend*), literal translation “that makes you fall on your bottom”, very surprising.

Looking at the photo, taken in Paris in 1968, we can almost hear Marcel explaining some “surlecutant” result, with this special movement of the left hand, and his eyes glowing with enthusiasm.

On the occasion of person-to-person exchanges, Marcel would comment on our papers (he was a very careful reader), or way of lecturing. He explained to us that giving a lecture is like acting a play: you should prepare a lot, yet give the impression that you are improvising. He also told us never to show “where you suffered”, meaning to avoid spending too much time on technicalities in a lecture.

Some papers in this volume concern, in a close or more remote way, domains which Marcel himself investigated, or which popped up in his seminar. Other papers concern subjects developed by his former students, or his numerous friends.

- The relations between the spectrum of the Laplacian and Geometry.
- The relations between Geometry and Topology.
- The study of Negative Curvature.
- And more generally the Inverse Geometric Problems.

We shall not attempt to review Marcel’s important contributions to mathematics and we refer to the article “Marcer Berger Remembered” in the *Notices* of the American Mathematical Society [3].

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