

# Pierre Deligne

**Professor at the Institute for Advanced Study, Princeton NJ**

## **2004 Balzan Prize for Mathematics**

*For major contributions to several important domains of mathematics (incl. algebraic geometry, algebraic and analytic number theory, group theory, topology and Grothendieck theory of motives), enriching them with new and powerful tools and with magnificent results such as his spectacular proof of the Riemann hypothesis over finite fields (Weil conjectures).*

**Institution Administering Funds:** Independent University of Moscow

**Adviser for the Balzan General Prize Committee:** Jacques Tits

## **Pierre Deligne Contest**

The Pierre Deligne Contest was a competition for young mathematicians of Russia, Ukraine and Belarus. The contest winner was awarded a three-year research grant. The aim of the contest was to help young mathematicians to stay in their home countries to carry out scientific research.

The main rules were:

- Any person 35 or under who has a Ph.D. in mathematics and lives in Russia, Ukraine or Belarus was eligible for the competition.
- Competitors had to provide a research statement, and grant recipients had to present an annual report with a summary of that year's achievements and their plans for the following year.
- All papers submitted by grant recipients during the grant period were to mention partial funding from Pierre Deligne's 2004 Balzan Prize in Mathematics.

The Jury consisted of two Co-Chairmen, two Vice-Chairmen, two scientific secretaries and numerous experts. The Jury members were: Pierre Deligne (Co-Chairman), Victor Vassiliev (Co-Chairman), Boris Feigin (Vice-Chairman), Yuliy Ilyashenko (Vice-Chairman), Mikhail Agranovich, Valery Beloshapka, Victor Buchstaber,

Alexander Bulinskiy, Yurii Burman (scientific secretary), Alexey Gorodentsev, Sabir Gussein-Zade, Vadim Kaloshin, Alexander Khelemskiy, Askold Khovanski, Valeriy Kozlov, Sergey Lando, Segrey Matveev, Sergey Natanzon, Leonid Pastur, Alexander Razborov, Armen Sergeev, Alexander Shen (scientific secretary), Leonid Shilnikov, Albert Shiryaev, Iskander Taimanov, Dmitry Treshchev, Michail Tsfasman, Anatoly Vershik, Ernest Vinberg and Mikhail Zelikin.

Balzan funds were used to finance seventeen three-year research grants: five in December 2005; five in 2006; five in 2007; and two in 2008. Since the grants are for three years, those awarded in 2008 continued until the end of 2011. After the 2008 the funds were exhausted. However, Pierre Deligne decided to prolong the contest through 2009.

**Researchers:**

*2005 Winners:* Pavel Kolesnikov (Sobolev Institute of Mathematics, Novosibirsk), Alexander Kuznetsov (Steklov Mathematical Institute, Russian Academy of Sciences), Marat Rovinski (Independent University of Moscow), Sergei Shadrin (Moscow), and Arcady Skopenkov (Moscow State University).

*2006 Winners:* Mikhail Bondarko (St. Petersburg State University), Denis Borisov (Bashkir State Pedagogical University, Ufa), Sergey Loktev (Institute for Theoretical and Experimental Physics, Moscow), Taras Panov (Moscow State University), and Leonid Rybnikov (Institute for Theoretical and Experimental Physics, Moscow).

*2007 Winners:* Ivan Arzhantsev (Moscow State University), Leonid Positselski (Independent University of Moscow), Anton Savin (Independent University of Moscow), Evgenii Feigin (Independent University of Moscow), and Ilya Shkredov (Moscow State University).

*2008 Winners:* Evgenii Vdovin (Sobolev Institute of Mathematics, Novosibirsk), and Dmitry Chelkak (St. Petersburg).

*2009 Winners:* S.V. Oblezin (Moscow), and V.A. Timorin (Moscow).

Sergei Shadrin left Russia to take up a position at the Universität Zürich a few months after winning his grant in December 2005. Hence, according to the rules of the contest, he was no longer able to receive the grant.

**Publications:**

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- *On irreducible algebras of conformal endomorphisms over a linear algebraic group*, Sovrem. Mat. Prilozh T60 (2008), 42-56.
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- *Homological projective duality*, Publ. Math. IHES, 105, n. 1 (2007), 157-220.
- *Quiver varieties and Hilbert schemes*, Moscow Mathematical Journal, Volume 7 (2007), N. 4.
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- *On maximal proper subgroups of field automorphism groups*. Selecta Math. 15: 2 (2009), 343-376.

Skopenkov, A., *A new invariant and parametric connected sum of embeddings*, Fund. Math. 197 (2007), 253-269.

- *A characterization of submanifolds by a homogeneity condition*, Topol. Appl. 154 (2007), 1894-1897.
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- *Classification of smooth embeddings of 3-manifolds in 6-space*, Math. Zeitschrift, 260:3, (2008), 647-672.
- *Embedding and knotting of manifolds in Euclidean spaces*, in: *Surveys in Contemporary Mathematics*, N. Young and Y. Choi (ed.), London Math. Soc. Lect. Notes, 347 (2008), 248-342.

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- Bondarko M.V., Dievsky A.V., *Non-abelian associated orders of wildly ramified local field extensions*, Zapiski Nauchnyh Seminarov POMI, vol. 356, 5-45, (2008).
- *Differential graded motives: weight complex, weight filtrations and spectral sequences for realizations; Voevodsky versus Hanamura*, J. Inst. Math. of Jussieu, 8 (2009), no. 1, 39-97.
- *Weight structures vs.  $t$ -structures; weight filtrations, spectral sequences, and complexes (for motives and in general)*, Journal of K-theory, Vol. 6, 03, 387-504, (2010).

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Vdovin, E. P., *Carter subgroups of finite groups*, Siberian Adv. Math. v. 19 (2009), No. 1, p. 1-15.

**Link:**

[http://www.mccme.ru/pdc/rules\\_e.html](http://www.mccme.ru/pdc/rules_e.html)