

Gamow and Odessa

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INTRODUCTION

These Conference and School are devoted to the 105th birthday anniversary of Georgij (George) Antonovich Gamow, one of the greatest physicists and cosmologists of the 20th century. Gamow has made an important and decisive contribution to modern physics, cosmology and biology. His three most significant contributions to science are:

1. He discovered the quantum nature of alpha-decay in nuclear physics (1928).
2. He proposed the theory of the Hot Universe (1946-1953).
3. He found the clue to the genetic code in biology (1954).

George Gamow was born in Odessa on March 4th 1904.



Fig 1. The building where Gamow was born and lived in Odessa (Pastera Str 17)

Gamow was always proud of his Odessa origin. In our story about Gamow and Odessa we'll take quotations from the interview by Charles Weiner of George Gamow in 1968 – the last year of his life.

Gamow: “My father was teaching Russian language and literature in a school for boys, and my mother was teaching geography and history in a school for girls.



Fig. 2 George Gamow and his father and mother



Fig. 3 George Gamow
(3 years old) at the village
near Odessa

My father's father was commander of the Kishinev garrison, a general or something in the Russian Imperial Army and my mother's father was Archbishop of Odessa and in charge of all the religion for all the lands north of the Black and Azov Seas called New Russia [Novorossia].

And back in the father line, it was all military all the way back, and the mother's line was all clergy. On the father's side, he had four or five brothers-- I don't remember-- and all became officers of the Army and were killed in the Turkish war or some other war. And Father was the only man whom my grandfather could send to the university, Odessa University, so he graduated and became a teacher."

Mother's family Libedintsevy lived in Odessa and had a great contribution on life of George Gamow.

Gamow: "My mother was the only girl in the family. One brother was District Attorney of Odessa, or something; another was teaching classical languages; another was a captain of a battleship of the Black Navy; and still another was a chemist and ichthyologist. Here the clergy spread into the sciences, so to speak. "

Gamow's mother died when he was nine. His father brought him up after that. When he was 13 father gave him a telescope and microscope. These devices determined his future love to astronomy, physics, mathematics and biology. The appearance of Halley comet in 1910 had a special impression on Gamow. Young George discovered the aspiration to study macro and micro world as the whole one.

Gamow: "When in school they were teaching algebra, I was studying differential equations at home. I learned Einstein's theory of relativity when I was still in school. I simply got interested." During the school period Gamow read a lot of books of astronomy, maths and relativity theory. All these books were published in Odessa by publishing house 'Matezis'.

GAMOW AND ODESSA UNIVERSITY

Gamow was born and lived on Pastera Street close to University. Gamow's life in Odessa always connected with University and its Astronomical Observatory. His uncle taught at the chemical department of University. Gamow's father studied in Odessa University in Russian Language and Literature. Gamow studied in Odessa University during 1921-1922.



Fig. 4 The Odessa (Novorossisk) university where studied Gamow

That was difficult time of civil war. There were two mathematicians: Kagan and Shchatunovski. And so from them Gamow learned the basis of real mathematics, like the theory of numbers, topology, theory of infinity, and things like this. While Gamow lived in Odessa, Astronomical observatory of Odessa University was headed by Professor A.Y. Orlov. He supported youth in aspiration of astronomy. So Gamow during his studies in University worked as an evaluator in observatory.



Fig. 5 The telescope "Cook" of Astronomical Observatory of university on which Gamow studied the sky

In the same time Gamow got acquainted with Professor V.P. Tsesevich and with future designer of the rocket engines, the Academician V.P. Glushko. Nevertheless, at that period outstanding mathematicians and physicists worked in Odessa. Some of them then moved to Moscow and Leningrad. Gamow also continued his studies in Leningrad University. There his converging way in science began and its beginning was in Odessa.

In Odessa Gamow used to love to organize jokes and improvisations and to tell anecdotes. A lot of famous scientists got very exact and short nicknames from him. In order to understand his character and peculiar thinking style, we should say a “few words” about Odessa. Odessa was founded in 1794 by the decree of Ekaterina the Second. It has been European freedom-loving and multi-ethnic city since its foundation. In its formation there was a big contribution of «great Frenchmen» – Duke de Rishelieu, de Ribas, Franz de Volan, Count Langeron. Its cosmopolitan nature was documented by the great Russian poet Alexander Pushkin, who lived in internal exile in Odessa between 1823–1824. In his letters he wrote that Odessa was a city where "you can smell Europe. French is spoken and there are European papers and magazines to read". In the 19-th and in the beginning of the 20- th century it was the fourth largest city of Imperial Russia, after, Saint Petersburg, Moscow and Warsaw. At that time about 500,000 people of 130 nationalities lived in Odessa! Industry, science, education, literature and art developed in Odessa.

Odessa is not just the city but the whole country or nation. And this is proved with its history. Because Odessa has its own flag, emblem, literature, music, its unique humour and language. But the main richness of Odessa is her citizens – Odessians and the most beautiful Odessian women! A list of world known scientists lived and worked in Odessa. Among them: Ilya Mechnikov (Nobel Prize in Medicine 1908), Igor Tamm (Nobel Prize in Physics 1958), Selman Waksman (Nobel Prize in Medicine 1952), Dmitri Mendeleev, Nikolay Pirogov, Ivan Sechenov, George Gamow, Nikolay Umov, Leonid Mandelstam, Aleksandr Lyapunov, Mark Krein, Alexandr Smakula, Waldemare Haffkine and Valentin Glushko.

One of the most prominent pre-war Soviet writers, Valentin Kataev, was born here and began his writing career in the high school (gymnasia). Before moving to Moscow in 1922, he made quite a few acquaintances here, including Yury Olesha and the writing duo Ilya Ilf and Evgenie Petrov. These authors and comedians played a great role in establishing the "Odessa myth" in the Soviet Union. Odessites were and are viewed in Russian culture (in the broad sense of the word "Russian") as sharp-witted, street-wise and eternally optimistic. These qualities (along with a strong accent) are reflected in the notorious "Odessa dialect", borrowing chiefly from the characteristic speech of the Ukrainian Jews, enriched by a plethora of influences common for the port city.

Odessa produced one of the founders of the Soviet violin school, Piotr Stolyarsky. It has also produced a famous composer Oskar Borisovich Feltsman and a galaxy of stellar musicians, including the violinists David Oistrakh and pianists Sviatoslav Richter, Benno Moiseiwitsch, Vladimir Pachmann, Shura Cherkassky, Emil Gilels, Maria Grinberg, Simon Barere, Leo Podolsky, Yakov Zak. Leonid Utesov – the first Soviet jazzman was born and lived in Odessa.

The Odessa humor is a notable part of both Jewish humor and Russian humor. The Russian language as spoken in Odessa is influenced by Yiddish and Ukrainian in

garammar, vocabulary, and phraseology. As a result, many phrases sound inherently and uniquely humorous to Russian speakers and constitute a staple of Odessa humor. Since 1972 Odessa has been hosting the annual festival of humor, 'Humorina'. For this and other reasons Odessa was known as the "Capital of humor" in the World.

Gamow was always proud of his Odessa origin. This can be noticed in his "World line":

1. In the way he lived (he tried to solve any problem improvising and involving his famous colleagues into it),
2. In the way he solved insuperable scientific problems (alpha-decay, theory of Big Bang, urca-process , decoding of genetic code),
3. In the way he used to speak (while discussing serious problems, he always told a lot of jokes),
4. In the way he prepared scientific papers (he made L. Landau climb to the top of Piz da Daint in Swiss Alps mountains in order to sign their common scientific paper for the print),
5. In the way he made up funny nicknames his colleagues,
6. In the way he drew funny pictures for his own books and wrote music for his poems.

That great "Gamow style" was molded in Odessa. So first of all George Gamow is Odessian!

GAMOW AND BIG BANG

After the relict radiation had been discovered in 1965 Gamow had to apply a lot of efforts in order to prove that it was predicted in his and Alfer–Hermann theory of hot Universe. Then it was called the theory of Big Bang. In his interview below his authorship can be perfectly proved.

Weiner: Right. And the cosmology has continued. Now that's one of the final things that I want to get into. Your work in stellar energies and star evolution, leads to certain cosmological views, and so, in the popular mind and in the scientific community, you were considered, and still are, a champion of a particular cosmological theory. But I don't know who popularized it as "big bang." Did you? Or did it come from some other source?

Gamow: Well, I don't like the word "big bang;" I never call it "big bang," because it is kind of cliché. This was invented, I think, by steady-state cosmologists--"big bang" and also the "fire ball" they call it, which has nothing to do with it--it's not fire ball at all. Nothing to do with the fire ball of atomic bomb. I call it radiation regime and meta regime. And there is no ball because you never see seams in it, so there is no ball if it means the surface of a ball. High temperature was also out.

Weiner: That's interesting because the names are practically synonymous in the popular mind: Big bang equals Gamow. You know that?

Gamow: Yes.!

GAMOW CONFERENCE IN ODESSA

These Conference and School was a 4th Gamow Conference in Odessa, after those in 1994, 1999 and 2004 years, and the 9th annual Gamow School, starting from 2001 year. We intended to bring together experts on the subjects of modern astrophysics, cosmology, high energy physics and biology with a number of interested scientists and students, in order to discuss the most recent developments and problems related to the topics of the activities, exchange of ideas, review major experimental and theoretical efforts.

The First Odessa Gamow's Conference: "Astrophysics and Cosmology after Gamow" (September 5-10, 1994) was held with financial and organizational support of Euro-Asian Astronomical Society. After the appeal of participants of the First Gamow conference and rector of Odessa University to Odessa Mayor, a decision was made to name one of the beautiful Squares in Odessa, after Gamow.

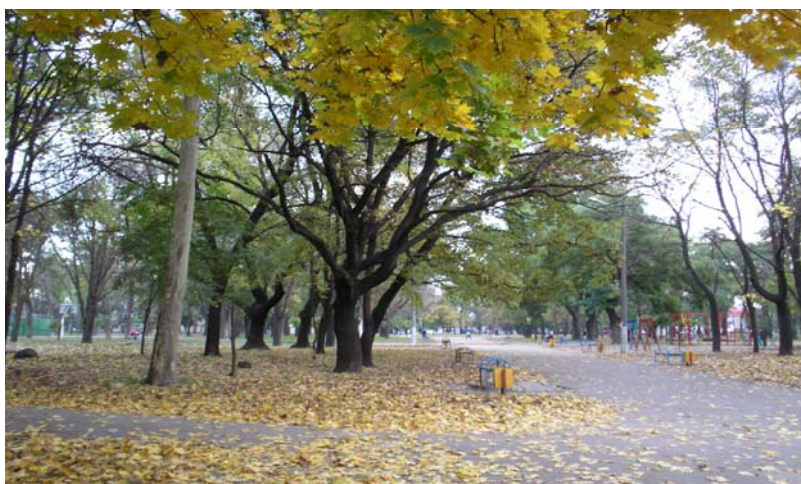


Fig. 6 Gamow's square in Odessa

At the Second Gamow conference : "The Universe of Gamow: Original ideas in Astrophysics and Cosmology" (August 16-22, 1999) the lecture: "The Big Bang Model: The origin and development" was presented Ralph Alpher – Gamow's co-author. Professors of Colorado University (where G. Gamow worked), Gamow's son Igor Rustam Gamow with the report : "Memories of My father, George Gamow" and "Gamow professor" Dick McCray took part in that Conference.

The Third Odessa Gamow's Conference: "Astrophysics and Cosmology after Gamow – theory and observations" (August 8-14, 2004) was devoted to 100-th anniversary. In Physics Department of Odessa University Gamow student grant was established and jubilee medal was produced.



Fig. 7 Gamow's memorial medal

They were handed to members of SOC and guest speakers (G.S. Bisnovaty-Kogan, I.D. Novikov, A.G. Chernin, J. Lominadze, M. Shapiro and others.)

The 4-th Conference and the 9-th Gamow's School have been devoted to 105-th anniversary G.Gamow and International Year of Astronomy 2009.

GAMOW AND US

The idea of organizing the Gamow Conferences and schools was presented by Odessa Astronomical Society, Astronomical observatory, Astronomical and Theoretical Physics Departments of Odessa University after I.I. Mechnikov in 1993. Annual Gamow Summer Astronomical school: "Astronomy and beyond: Astrophysics, Cosmology, Radioastronomy, Astrobiology" have been held at the University camp Chernomorka annually since 2001. More detail information you can see on WEB-page: www.astro-soc.odessa.ua. 15 years have passed since the First Gamow's conference! Many of us in this conference were participants of Gamow's Conferences and Gamow's schools. We thank you for active participation and cooperation! The greatest gratitude to the standing Chairman of SOC Professor G.S.Bisnovaty-Kogan and to Professor A.D. Chernin - the biographer of Gamow! We thank the chair and vice-chair of the SOC Prof. G.S. Bisnovaty-Kogan and Prof. A.I. Zhuk for the tireless efforts to organize the conference, inviting the participants and editing of the proceedings. We also want to express our special gratitude to Prof. S.K. Chakrabarti for his titanic efforts during the editing of the contributing papers and preparation of the proceeding for qualitative and well-timed publication.

We invite you to next meetings at Gamow's Conferences and Schools!