Алексей Александрович Солуянов

(20.10.1983 - 26.10.2019)

Ушел из жизни кандидат физико-математических наук, профессор Физического института Университета Цюриха, старший научный сотрудник кафедры квантовой механики СПбГУ Алексей Александрович Солуянов.

Алексей Александрович Солуянов, выпускник кафедры квантовой механики физического факультета СПбГУ, защитил дипломную работу под руководством профессора Игоря Васильевича Абаренкова.

В 2007 году Алексей Александрович поступил в аспирантуру университета Рутгерса (Rutgers University), США, где получил степень кандидата наук в 2012 году под руководством Дэвида Вандербильта (David Vanderbilt). Затем он работал в высшей технической школе города Цюрих (Eidgenössische Technische Hochschule (ETH) Zürich), сначала постдоком (2012-2014), затем старшим научным сотрудником (2014-2018).

С 2016 года Алексей Александрович являлся совместителем в Санкт-Петербургском государственном университете на должности старшего научного сотрудника кафедры квантовой механики. С 2018 года Алексей Александрович возглавлял собственную исследовательскую группу (Design & Discovery Project 6) в качестве профессора Швейцарского национального научного фонда кафедры физики университета Цюриха (University of Zurich - UZH).

Алексей Солуянов был одним из ведущих в мире специалистов по теории топологических эффектов в физике твердого тела. Его вклад в область топологических состояний материи был как фундаментальным, так и новаторским. Его работы привели к более глубокому пониманию теории зон кристаллических материалов. Он предсказал множество классов полуметаллов, которые были обнаружены экспериментально вскоре после этого. Кроме того, им разработаны различные пакеты программного обеспечения, которые упростили открытие новых экзотических квантовых материалов. В своей работе Алексей Александрович отличался дальнозоркостью и выдающейся физической интуицией. С самого начала своей карьеры он очень успешно руководил дипломными работами магистрантов и аспирантов. В последние годы жизни Алексей Александрович боролся с

тяжелой болезнью. Несмотря на болезнь, в этот период времени он сумел сделать свои лучшие работы.

Алексей Солуянов скончался в Санкт-Петербурге в возрасте 36 лет 26 октября 2019 г.

Алексей Александрович был весьма разносторонним человеком, разбирался в искусстве и музыке, любил путешествовать. В общении с коллегами и учениками всегда был доброжелателен и деликатен, обладал превосходным чувством юмора, был хорошим товарищем, всегда готовым прийти на помощь коллегам. Таким он навсегда останется в памяти всех, кому посчастливилось с ним встречаться.

Фотография и текст:

http://fock.phys.spbu.ru/soluyanov.htm

Этот же текст на английском: http://fock.phys.spbu.ru/english/soluyanov_en.htm (best works)

Заглавное фото: https://www.physik.uzh.ch/en/groups/soluyanov/team/soluyanov.html

Публикации, посвященные памяти Алексея Солуянова

Physics Today

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ALEXEY SOLUYANOV

THERE ARE TIMES IN ONE'S LIFE WHEN A REMARKABLE PERSON COMES AROUND AND TOUCHES THEIR EXISTENCE IN PROFOUND WAYS. FOR THE ONES WHO HAD THE PRIVILEGE OF KNOWING ALEXEY SOLUYANOV, HE WAS THAT PERSON.

ALEXEY STARTS STUDYING PHYSICS IN THE GREAT TRADITION OF THE RUSSIAN SCHOOL, IN HIS BIRTHPLACE OF ST. PETERSBURG. LATER, AROUND 2012, HE REMARKS THAT HIS INITIAL SCIENTIFIC UPBRINGING HAD KEPT HIM GROUNDED TO THE REALITY OF EXPERIMENTS, EVEN THOUGH HE ALREADY DEMONSTRATES REMARKABLE THEORETICAL AND ANALYTICAL PROWESS DURING HIS PHD WITH DAVID VANDERBILT AT RUTGERS. IT IS THE BEGINNING OF TOPOLOGICAL INSULATORS, AND ALEXEY'S DOCTORATE PRODUCES ONE OF THE SEMINAL PAPERS IN THE FIELD. A YOUNG TOPOLOGICAL PIONEER, ALEXEY PROVES THAT THE TOPOLOGICAL INSULATOR, A NEW STATE OF MATTER THAT HAD BEEN RECENTLY THEORETICALLY PREDICTED AND EXPERIMENTALLY OBSERVED, CANNOT BE DESCRIBED IN TERMS OF LOCAL ORBITALS RESPECTING A CERTAIN SET OF SYMMETRIES. THIS REMARKABLE OBSERVATION HAS NOW BECOME THE DEFINITION OF ALL THE TOPOLOGICAL INSULATOR STATES DISCOVERED SINCE 2006. IT IS THE WAY TOPOLOGY IN ELECTRONIC CRYSTALLINE MATERIALS IS NOW UNDERSTOOD.

THERE IS A CERTAIN RUGGED MELANCHOLY INTRINSIC TO THE RUSSIAN SOUL, A CERTAIN ACCEPTANCE OF FATE—INTERRUPTED BY A STEELY RESOLVE TO CONQUER WITH GRACE THE DIFFICULTIES THAT COME ONE'S WAY. ALEXEY ALWAYS SINGLED OUT DAVID VANDERBILT'S QUIET CARE AND SUPPORT IN HIS FIRST, SUCCESSFUL FIGHT AGAINST SKIN CANCER, DURING HIS DOCTORATE. WITH A NEW LEASE ON LIFE, THE TIME IS RIPE FOR A HALF-DECADE OF BREAKTHROUGH SCIENTIFIC DISCOVERIES, LASTING CONTRIBUTIONS TO SCIENCE, ALMOST PATERNAL MENTORING OF STUDENTS, INTENSE FRIENDSHIPS AND EXPERIENCES, SHARED STORIES, TRIPS, ROCK STAR–LIKE PARTIES, INTENSE CONFERENCE SCHEDULES, FAMILY, AND LOVE. IT IS ABOUT LIVING AN INTENSE, MEANINGFUL, REWARDING LIFE. HE BALANCES PASSION, COMMITMENT, AND HUMOR WITH AN EASE THAT INSPIRES LOVE AND ADMIRATION.

LATER, AS A POSTDOCTORAL RESEARCHER AT THE PRESTIGIOUS ETH ZURICH IN MATTHIAS TROYER'S GROUP, ALEXEY EMBARKS ON DISCOVERING MANY OF TODAY'S TOPOLOGICAL PHASES OF MATTER. WEYL FERMIONS, NODAL LOOPS, NON-SYMMORPHIC SEMIMETALS, AND MANY OTHER, BEAR HIS LASTING WATERMARK, AND COME AT AN ASTONISHING FREQUENCY IN A LIMITED TIME. HE AFFECTIONATELY AND SUCCESSFULLY MENTORS MANY GRADUATE STUDENTS. HE OVERSEES THE DEVELOPMENT OF WHAT ARE NOW WIDELY-USED CODES (ONE EXAMPLE BEING Z2PACK) FOR IDENTIFYING TOPOLOGICAL BAND STRUCTURES IN REALISTIC CRYSTALS, BASED ON WANNIER STATES AND WILSON LOOP METHODS THAT HE DESIGNS. HE CONTRIBUTES TO MICROSOFT'S EFFORT BUILDING A QUANTUM COMPUTER, BY USING THE CODES HE DEVELOPED TO IDENTIFY MATERIALS WITH LARGE SPIN-ORBIT COUPLING, WHICH FORM THE BASIS OF THE QUBITS. HE PASSIONATELY THRIVES ON CONNECTING ESOTERIC MATHEMATICAL CONCEPTS DESCRIBING THE TOPOLOGY OF MANIFOLDS WITH THE REALITY OF NATURE, EMBODIED IN QUANTUM

MATERIALS. HE IS A LARGER-THAN-LIFE PRESENCE, SOFT-SPOKEN BUT SPARKING BRILLIANT VERVE IN CONVERSATIONS WITH COLLABORATORS AND FRIENDS THAT COULD LAST FROM MORNING CONFERENCE TALKS UP TO THE MIDNIGHT HOURS OF A DIMLY LIT BAR. HE SWIFTLY ADVANCES IN HIS CAREER AND BECOMES AN ASSISTANT PROFESSOR AT UNIVERSITY OF ZURICH, BUILDS A GROUP, AND DESIGNS AND CONTRIBUTES TO THE FAST ASCENT OF A CONDENSED-MATTER POWERHOUSE. HE IS A WONDERFUL SON TO VERY PROUD PARENTS. HE MARRIES THE LOVE OF HIS LIFE FROM COLLEGE DAYS IN ST. PETERSBURG, IS A FANTASTIC FATHER, AND AT THE SAME TIME FIGHTS HEROICALLY CANCER'S SECOND PYTHONIC GRIND FOR THE PAST THREE YEARS.

A RUSSIAN PROVERB SAYS КАЖДЫЙ КУЗНЕЦ СВОЕГО СЧАСТЬЯ: "EVERY PERSON IS THE BLACKSMITH OF THEIR OWN DESTINY." FOR THE FORTUNATE TO HAVE KNOWN ALEXEY, HE REMAINS, A BIT, ALSO THE BLACKSMITH OF THEIR DESTINY. HE WILL BE SORELY MISSED.

WRITTEN BY ARIS ALEXANDRADINATA, B. ANDREI BERNEVIG, TOMAS BZDUSEK, GIUSEPPE CARLEO, XI DAI, GENNADY GOR, DOMINIK GRESCH, TITUS NEUPERT, MATTHIAS TROYER, DAVID VANDERBILT, MAIA G. VERGNIORY, GEORG W. WINKLER, QUANSHENG WU, AND OLEG YAZYEV

https://physicstoday.scitation.org/do/10.1063/pt.6.4o.20191213a/full/

Obituary on the site of University of Zurich 29 Oct 2019

https://www.physik.uzh.ch/en/news/News-2019/Alexey-Soluyanov.html

(оригинал на немецком https://trauer.nzz.ch/traueranzeige/alexey-soluyanov)

The NCCR MARVEL 07 Nov 2019

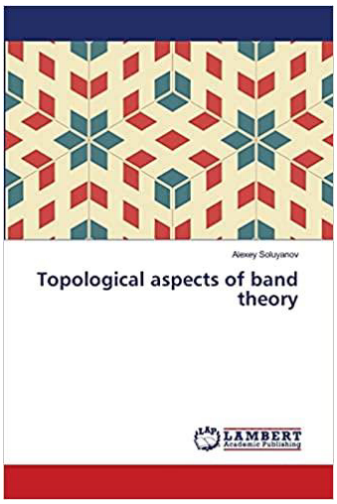
Alexey Soluyanov's research will continue to inspire MARVEL community

Soluyanov Best Paper Prize in Condensed Matter Physics

http://www.physics.rutgers.edu/grad/prizes/Soluyanov_CM_Giving.html

Научные труды Алексея Солуянова

PhD thesis: “Topological Aspects of Band Theory”, 2012



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