The Wonderful World of Wallywood

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Abstract

This paper presents a personal account of the scientific and professional adventures of Walter Greiner. It is based on an "after dinner talk" given for the celebration of his 70'th birthday held at the Frankfurt Institute for Advanced Study on April 3-6, 2006.

1 Introduction

It is a great honor and personal pleasure to give this talk celebrating the accomplishments of Walter Greiner, and to honor his 70th birthday. My wife Alice was unfortunately not able to be here. She values Walter very highly as a friend, appreciates him as a scientist, and helped in preparing this talk.

Alice gave me one strong piece of advice: Do not adapt the same story I told at the beginning of a talk celebrating Bikash Sinha's 60th birthday to offer at Walter's 70th!

(You see, I had heard rumors that Bikash was a little nervous about the talk I was going to give. I said he was feeling like a 60 year old virgin on his wedding night. He had a vague idea of what was to come, but not specific knowledge. This story clearly does not apply to Walter because he is 70.)

Others were also involved in preparation of this talk. I enjoyed the collaboration of family members and close friends able to contribute to photos and stories from the past. In particular, I gratefully acknowldge the help of Horst Stoecker, Carsten Greiner and Frau Greiner.

a b c

Figure 1: (a) Walter at ages 4-5 in Rennsteig in Thuringen (b) His first day in elementary school, in 1942. (c) Walter as a young student at the University of Frankfurt where he did his pre-diploma work. He is about 20 years old

2 Portrait of the Scientist as a Young Man

This talk is about the growth of a young boy into one of the great men of theoretical nuclear physics.

In the photo 1a, you see a young lad and his suitcase. This shot is symbolic of the life that lay ahead: Walter is always on the road. Carsten says that even then, Walter was planning on a career as a travelling salesman. I like the photo since it shows a boy who, by the firmness with which he holds his suitcase, is asserting control over his world; a world which was in the midst of war, and collapsing around him. In the photo 1b, Walter is enjoying his first day of school. He looks happy. Perhaps he has already glimpsed his future, and decided to become an academic. The next photo 1c shows him as a young man at the university. Again, one can see the enthsiasm in his smile.

Walter became a diploma student at the Technische Hochschule in Darmstadt. In the photo, Fig. 2a, taken in 1959-1960, Walter wanders in the perpetual foggy haze which surround diploma students. In Fig. 2b, he is shown as a PhD student at the University of Freiburg with his advisor Prof. Hans Marshall. It is 1961, the sun is out, and clearly a new day has dawned.

a

b

Figure 2: (a) Walter as a diploma student at Darmstadt (b) Walter and his advisor Prof. Hans Marshall in 1961.

He is eager to make his mark in the world. There is a story that Walter did his thesis in 3 months, but had to wait 2 more years to get his degree.

In the early 60's, Walter went off to the United States. He first taught at the University of Virginia, where Martin was born in 1963. In 1964, he was back at the University of Freiburg as an assistant professor, where Carsten was born. He was also an assistant professor at the University of Maryland in 1964. (Even then he had the remarkable property of being at many different places at the same time, rather like Schrodinger's cat, but without meeting the same fate.) That same year, received an offer of a full professorship at the University of Frankfurt in the same year, and turned down a promotion to associate professor at University of Maryland. He later turned down offers of full professorships at the University of Virginia and Duke University.

In other words, Walter was hot stuff.

In the photo 3, Walter is becoming "ordinarius" at the University of Frankfurt in 1965. He gave a lecture, "Is the Nucleus a Superconductor?" In fact some of his former students, who are quite well known, still work on variations of this problem. The area has a fancier label now, called "Color Superconductivity", and it is about quarks rather than the nucleons in a nucleus, but in many aspects it is similar to what Walter first discussed about 40 years ago. The announcement for the lecture is shown in Fig. 4

Figure 3: Walter at the University of Frankfurt in 1965.

JOHANN WOLFGANG GOETHE-UNIVERSITÄT
Frankfurt am Main

Am Montag, 9. Mai 1966, 12 Uhr c. t. findet in der Aula der Universität die feierliche Antrittsvorlesung des Ordinarius für Theoretische Physik,

Herrn Professor Dr. rer. nat. Walter Greiner,

über das Thema

„Ist der Atomkern ein Supraleiter?"

statt.

Wir beehren uns, hierzu einzuladen.

Frankfurt am Main, den 25. April 1966

Rüegg
Rektor

Staude
Dekan der Naturwissenschaftlichen Fakultät

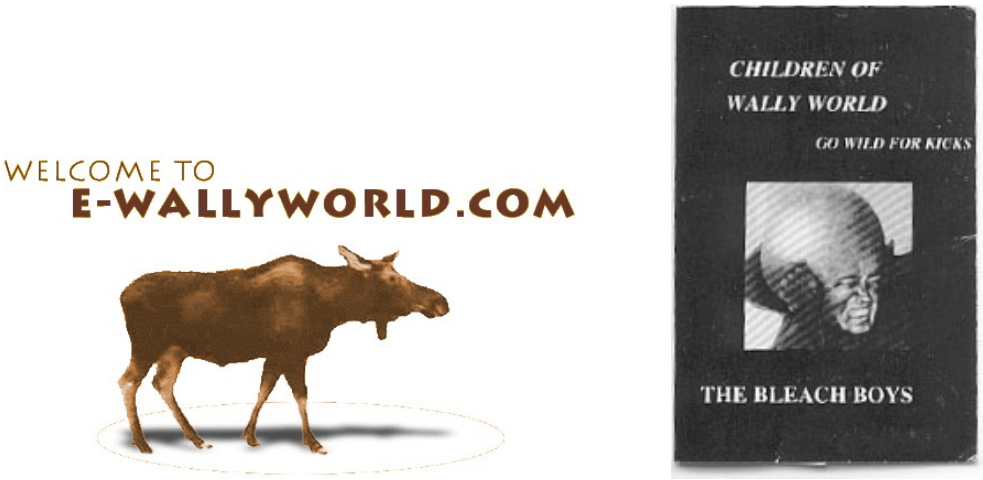
Die Vorlesungen fallen in der Naturwissenschaftlichen Fakultät von 12-13 Uhr aus.

Figure 4: The announcement for the lecture where Walter receives his "ordinarius".

3 Welcome to Wallywood!

Some time ago, I was at a meeting organized by Walter in Pensicola, Spain. While I was having dinner with Mike Strayer, Mike introduced the word Wallyworld into my vocabulary, using it to describe the breadth of dominion of Walter's influence. The term has it origins in a movie starring Chevy Chase about the family Griswald driving accross the country to go to a famous theme park: Wallyworld. The symbol of Wallyworld is the moose, Wally. (A moose is the biggest animal in the Great North Woods. Mooses are generally gentle vegetarians, but if provoked, can be very dangerous.)

In the following figures, I offer pictures related to Wallyworld that can be found on the internet.



(a) (b)

Figure 5: a The offical website of E-Wallyworld. c The book, "Children of Wallyworld" , starring the Bleach Boys

One of the first achievements of Wallyworld was, one might say, culinary: The derivation of a theory about Frankfurters with wine. In Fig. 6a you see Professor Huber, who became the first Professor at Erlangen, a Professor at Bonn, and eventually president of the University of Bonn. His theory is known as Weinkanel theory, and one can glimpse on its explanation in the photograph. The operator W^+ adds a bottle of wine to a state, while

a

b

Figure 6: (a)Professor Huber and Weinkanal theory. (b)The first student of Wallyworld.

W^- removes a bottle of wine. The states are Frankfurters with a number of bottles of wine; the ground state is a Frankfurter with no bottle of wine The question is whether or not Frankfurters with wine are bosons or fermions. As you can clearly see from the figure, the happy state has one bottle of wine. If Frankfurters were fermions, adding a seocnd bottle of wine would annihilate the Frankfurter. Professor Huber has added another bottle of wine, and the result is a very happy excited Frankfurter. Therefore Frankfurters with wine are bosons. One can add an infinite number of bottles of wine to a Frankfurter without annihilating the Frankfurter.

In Fig. 6b, there is a picture of Walter's first PhD student, Prof. Weber, who is now at the University of Virginia. He is talking with an assistant, now Prof. Drechsel at Mainz. They may be, in spite of their cheerful expressions, discussing ways to prevent brain drain from Wallyworld. The poster in the background says "Stipendia in Foreign Countries: That is the Way to Go".

Every great dominion needs a strong leader, Fig. 7a, and there was never

(a)

(b)

(c)

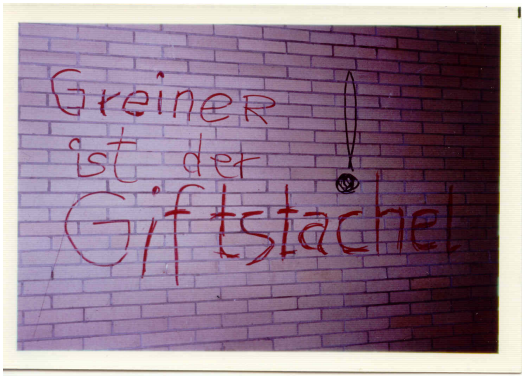
Figure 7: a One Smokin' Professor. b The Wally world Navy. c Defending from a sneak attack by the Russians .

one so naturally gifted for this role as Walter. He began early, and established a navy, Fig. 7b. Please note a young Admiral Scheid. Walter also would organize a vigorous defense when attacked by Foreign Powers, Fig. 7c, as seen in this view of him protecting Prof. Toepffer of Frankfurt, Johannesburg and Erlangen, from a sneak attack by the Russians.

Of course any strong leader makes enemies. One may even lose friends, and that hurts. Those of us who have tried to build institutions know how it can happen, and it always makes one sad, and can cut most deep. In other circumstances opposition is easier to deal with – when, for example, you are attacked by radical students, as shown in Fig. 8. William Blake penned an instructive poem to read when this happens:

I was angry with my friend:
I told my wrath, my wrath did end,
I was angry with my foe:
I told it not, my wrath did grow.

And I water'd it in fears,
Night and morning with my tears,
And I sunned it with my smiles,
And with soft deceitful wiles.



a

b

Figure 8: Anti Walter propaganda from the usual soruces of trouble

And it grew both day and night,
Till it bore an apple bright,
And my foe beheld its shine,
And he knew it was mine –

And into my garden stole,
When the night had veil'd the pole,
In the morning, glad, I see,
My foe outstretch'd beneath the tree.

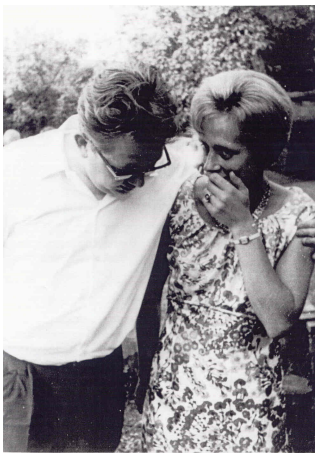
William Blake

There is a story about Ricky Nelson, a 1960's rock singer in the US. He was a child star of American television, and as he grew up on TV he began singing pop songs. He became somewhat of a teenage idol, but as he grew older, he, largely disappeared from the scene. When he was in his forties, he was invited to a reunion of rock singers at Madison Square Garden. He looked different than when he was a kid, and he sang songs which interested him rather than those that in his youth had made him famous. The audience responded by booing him off the stage. While flying back to California he wrote a song, "The Garden Party". The chorus is

But it's all right now.
I learned my lesson well.
You see, you can't please everyone,
So you got to please yourself.

Ricky Nelson (1972)

The song became his biggest hit, and is the song for which he is remembered. Walter has had his own garden parties, and known how to enjoy them. With



(a)

(b)

(c)

Figure 9: a Walter in a nice moment with his wife. b Walter enjoying the garden party.. c Professor Toepfer roasting Frankfurters. Martin helps. .

all of responsibility he had acquired, relaxed times with family and friends take on a special significance. In Figs. 9 - 10, there are photos of one such party. The pictures show how important family was to Walter. I particularly like the photo of Walter and his wife.

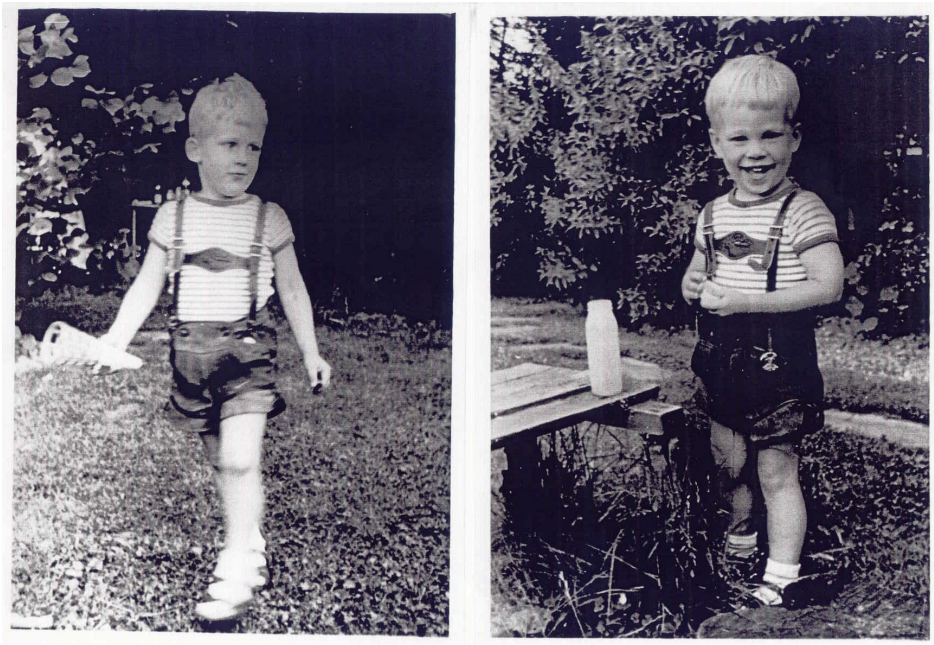


Figure 10: Martin and Carsten

4 The Stars of Wallywood

Any great nation has its capitol, where one can hope to sight its most famous people – its stars. For Wallyworld, the capitol it is Wallywood, Fig. 11

Figure 11: The capital of Wallyworld.

Wallywood's most famous director is of course, Walter, Fig. 12a, who is pointing to the Wallywood Walk of Fame, Fig. 12b. There is of course the Wallywood mascot, Miklos the lion, Fig. 12c, who is relaxing underneath a tree.

4.1 A Voyage to the Bottom of the Sea

The first production of Wallywood was Voyage to the Bottom of the Sea. A poster from the movie is shown in Fig. 13 a. You can see Walter steering the submarine at the bottom of the sea, and two divers in front of him.

I would like to think of the divers as Miklos Gyulassy and myself, since the two of us got to know Walter because of his work on this production. The problem that Walter was interested in was the production of electron positron pairs in strong fields. The way this happens is that an electron state becomes so tightly bound in a strong Coulomb field that it becomes a hole in the Dirac sea, corresponding to positron production. In principle, this hole can dive deeply into the Dirac sea. Stimulated by Walter's work in

(a)

(b)

(c)

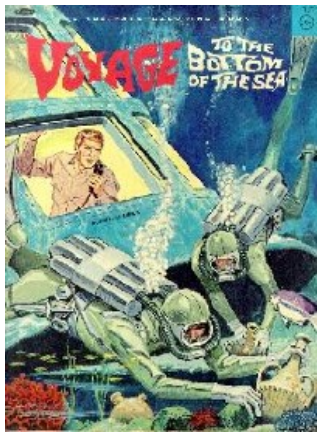
Figure 12: a Director Walter pointing towards the Wallywood Walk of Fame. b The Wallywood Walk of Fame. c The Wallywood mascot, the lion Miklos

this field, Miklos and I both did theses – he at Berkeley and I at Seattle – on vacuum polarization in strong fields. Later Miklos went off to Frankfurt to work with Walter. While I knew Walter's work well, I did not get to know Walter personally until several years later, when I was learning about ultrarealtivistic heavy ion collisions.

I think, however, it is more accurate to say that the divers in front of the submarine are Berndt Mueller and Johanne Rafelski, who did most of the seminal work in this field as young faculty-members at Frankfurt.

In Fig. 13b, you see Walter's curiousty aroused by his vision of a hole at the bottom of the sea. One may ask what aroused his curiousity. The answer can be seen in Fig. 13c. This classic painting of the mermaid is a beautiful piece of art, and should be shown to every young man in the world. It carries a message: No matter how attractive a relationship might seem in the beginning, it may simply by its very nature be impossible.

In Fig. 15, you see Walter together with some of his students. Berndt Mueller and Johanne Rafelski were Walter's students who went off to investigate the hole in the bottom of the sea. There is a children's song which expresses what happened:



(a)

(b)

(c)

Figure 13: a Voyage to the Bottom of the Sea. b Walter discovers there is a hold at the bottom of the sea. c The classic painting of the mermaid.

There's a hole at the bottom of the sea,
There's a hole at the bottom of the sea,
There's a hole, There's a hole,
There's a hole at the bottom of the sea.

This is of course the first report they sent back, when full of enthusiasm. Of course as they got to the bottom of the sea, they sent back a message showing that things got more complicated:

There's a log in the hole in the bottom of the sea,
There's a log in the hole in the bottom of the sea,
There's a hole, There's a hole,
There's a hole at the bottom of the sea.

Well, they sent back many more reports, and as we know things got more and more complicated. That is, unfortunately, the way things sometimes work. The last message was

There's a smile on the flea on the hair on the wart on the toe on the foot on the leg on the frog on the log in the hole in the bottom of the sea,
There's a smile on the flea on the hair on the wart on the toe on the foot on the leg on the frog on the log in the hole in the bottom of the sea,

Figure 14: Berndt Muller, Johanne Rafelski and Gerhardt Soff with Walter.

There's a hole, There's a hole,
There's a hole at the bottom of the sea.

Berndt and Johanne later went of to be famous for their work in ultrarelativistic heavy ion collisions. They collaborated with one another extensively. I think of them as Wallywood stars in their own right, Fig. 15.

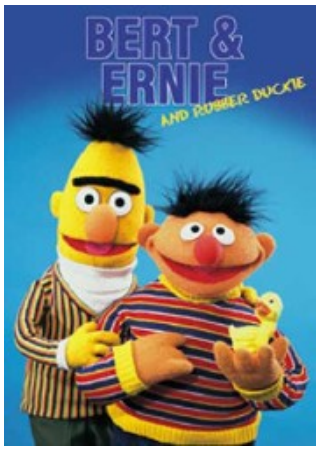


Figure 15: A poster for the famous chlidren's television and movie stars, Berndt and Ernie

4.2 Fantasy Island

There was a famous American television show called Fantasy Island, an advertisement which is shown in Fig. 16. The plot was different each week, yet followed a certain formula. Someone new would come to Fantasy Island, hoping to live out a certain fantasy. Generally things were more complicated than expected, and the fantasy would often be realized in an unanticipated way.

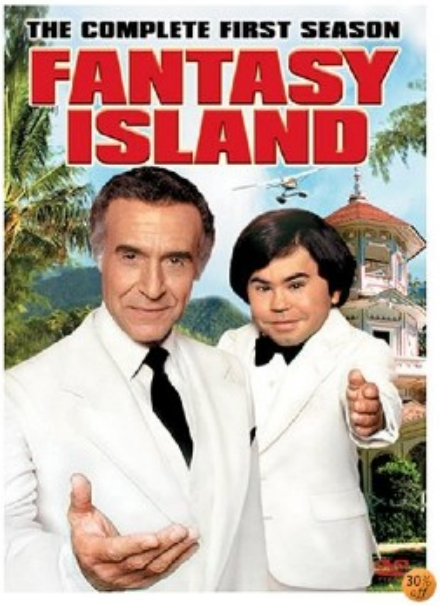


Figure 16: Ricardo Montalban and Tattoo, promoting Fantasy Island.

Walter's Fantasy Island is formed by the superheavy elements, the so-called island of stability of elements much heavier than those which currently exist in the periodic table. Walter and his group did seminal work in predicting how to make such elements, using his double shell model. The work that has been done by the group from Dubna has shown that such superheavies very probably exist, and they have perhaps even landed on Fantasy Island. In my opinion, the theoretical and experimental work done here is the most exciting "real nuclear physics" that I have seen in my lifetime. The possibility of making really long lived, very heavy, nuclei tests our ideas of nuclear

structure in extremum. One can imagine a program of novel experimental searches to let us continue to explore and define this island's geography.

4.3 Dr. Strangelove

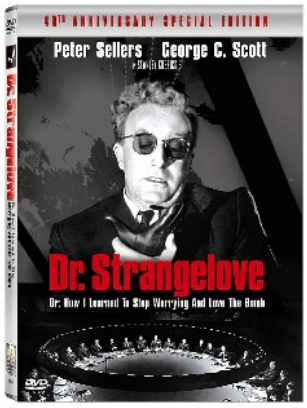
The group at Frankfurt were the inventors of the idea that there might be abundant heavy flavor production in heavy ion collisions. They also were one of the major groups advocating heavy ion collisions as a place to look for strangelets. Strangelets are made of strange quark matter. Witten some time ago argued that it is possible that ordinary nuclear matter might be unstable with respect to formation of strange quark matter. Strange quark matter is unlike ordinary nuclear matter since it can exists as stable objects to essentially infinite baryon number. Ordinary nuclear matter does not do this. Composed of roughly equal numbers neturons and protons, large nuclei have a big repulsive electromagnetic self energy, and therefore find it energetically favorable to fission into lighter nuclei. Strangelets are almost electromagnetically neutral, since they have almost equal numbers of up, down and strange quarks, whose charge

$$\frac{2}{3} - \frac{1}{2} - \frac{1}{3} = 0 \tag{1}$$

Therefore one could in principle make a strangelet of arbitrarily large size, and it would eat up surrounding matter. Such objects would, needless to say, be dangerous.

In Fig. 17a, is a flyer for the movie Dr. Strangelove. Dr. Strangelove was a nuclear physicist who loved bombs. In the movie, he advises the president, and together they succeed in blowing up the world. Dr. Strangelove was supposedly modeled on Eddie Teller, the famous physicist who was the father of the hydrogen bomb, Fig. 17b. Eddie Teller is a popular whipping boy of the left. I met him when a postdoc at SLAC 25 years ago. He had just retired to a conservative think tank at Stanford, and would go over to Lenny Susskind's house for evening pizza seminars. He was quite old at that time – but very sharp, and always thinking about physics. At that time Bjorken and I were trying to understand some peculiar cosmic ray events, and I remember talking with Teller about about strangelets (before the famous paper by Witten).

When RHIC and LHC were contemplated, there was much worry in the media about the possibility of making strangelets, and doing much damage



(a) (b) (c)

Figure 17: a The flyer for the movie Dr. Strangelove. b Walter and Eddie Teller. c The logo of Mad Magazine.

to the universe. This outcome is very unlikely, since there are very many processes in nature which would have produced such a catastrophic event if strangelets had the correct properites to trigger it. Several committees were set up to establish that there was essentially zero probability that this would occur.

A media report explaining the concern ends with a famous quote from Bob Jaffe:

> Some scientists, among them Frank Wilczek of the Institute for Advanced Study in Princeton, NJ have said that in theory, RHIC could trigger the runaway formation of a poorly understood breed of subatomic particle known as a stranglet which "eats" all it encounters, a chain reaction which could consume everything, everywhere. Fortunately, most experts aren't worried. MIT physicist Bob Jaffe says the chances of RHIC inducing Armageddon are exceeding rare, bordering on nil, but as he admits "You never know"
> www.wired.com

This reminds me of the logo for Mad Magazine Fig. 17c.

4.4 Attack of the Killer Tomatoes

Walter's group is most famous for its work on ultrarelativistic heavy ion collisions. Much of the work is on the hydrdynamical theory of such collisions. This is sort of like the study of tomato-tomato scattering. There was a not too famous movie about tomatoes, Attack of the Killer Tomatoes, Fig. 18a. In this movie, gigantic tomatoes arrived from outerspace. They went on a spree of violence and savagery unlike anything seen before on a movie: Whole families would be run over and flattened by huge tomatoes. Imagine the terror when you go to bed at night, knowing that early in the morning you may hear a faint sound of leaves rustling in the garden...

(a) (b) (c)

Figure 18: a Poster for the movie Attack of the Killer Tomoatoes. b Advertisement for the American television show, Mr. Ed.. c Poster for the movie Son of Godzilla.

There are many stars of the ultrarelativistic heavy ion effort. Horst Stocker is perhaps best remembered for his role as Mr. Ed, The Talking Horse., A front view of Mr. Ed is shown in Fig. 18b. Mr Ed's most famous quote is

A horse is s a horse, of course of course,
Unless it's a horse, of course of course.

The Zen significence of this is not lost on Horst.

There is also the Son of Godzilla, Fig. 18c, starring Walter and Carsten.

One of the stars of the younger generation is Adrian Dumitru, famous for his role as The Colorful Swishbuckler in Zorro the Gay Blade, Fig. 19. Young people should always be idealisitic and take on figures of authority, as Adrian does.

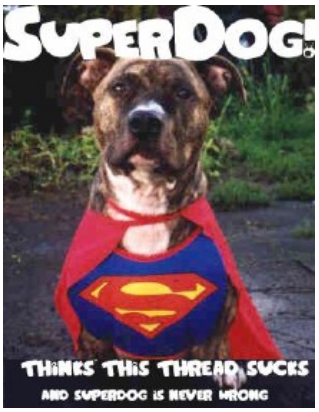
Figure 19: An advertizing clip for the movie, Zorro the Gay Blade.

4.5 Color Superconductivity

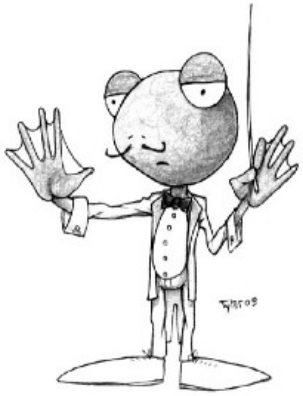
This field has yet to have a movie, but it has its stars nevertheless.

There is Colorful Igor Shovkovy, Fig. 20a, Superdog Drrrrrrk Rischke, Fig. 20b, and conductor Joechen Wambach, Fig. 20c. They have put together a group of young people to study the properties of matter at very high number density but low temperature, Fig. 21. The idea behind these studies is that at very high matter density and low temperature, matter becoems a superconductor of color charge. This superconductor has the property of expeliing color magnetic fields, and magnetic fields as well. It may have applications for neutron stars.

(a)



(b)



(c)

Figure 20: a Colorful Igor. b Superdog c Conductor Wambach.

Figure 21: The Color Superconductivity Group.

5 Walter's Academic Achievements

Walter is the auhor of nearly a thousand scientific papers:

Scientific Papers:
1960-1970: 72
1970-1980: 170
1980-1990: 223
1990-2000: 290
2000-2006: 32

He has been awarded eight honorary PhDs:

Honroary PhDs:
1982 U Witwatersrand, Johannesburg, SA
1990 U of Tel Aviv, IS
1991 U. Louis Pasteur, Strasbourg, FR
1992 U Bucharest, RM
1997 Lajos Kossouth U, Debrecen, HU
2001 U Nantes, FR
2001 U Nacional Autonoma de Mexico, MX
2002 U St. Petersbrug, RU

Pictures of him receiving some of these honrary awards are shown in Fig. 22

(a) (b) (c)

Figure 22: a TelAviv 1991. b Strasbourg 1991 c Joahnesburg 1992.

Walters Honors and Awards list is equally long and prestigous:

Honors and Awards:
1974 Max Born Prize and Medal: Institute of Physics, London and DPG
1982 Otto Hahn Prize, Frankfurt/Main, Germany
1986 First Professor in the Frankfurt Chair, U. of Frankfurt
1987 Fellow of Royal Society of Arts, London
1989 Member of Roland Eotvos Society of Hungary
1990 Honorary Professor, Peking University, China
1999 Honorary Member of Romanian Adademy, Bucharest
1998 Alexander von Humboldt Medal
1991 Officer dans l'Ordre Palems Academiques
2001 Memmber of Accademia Gioenia di Catania
2001 Honorary Professor, Jilin University, China

In Fig. 23, Walter is receiving the Otto Hahn Prize, presented by Walter Wallmann, who was at the time Oberbuergermeister of Frankfurt, and later Ministerpraesident of Hessen.

Figure 23: Walter receiving the Otto Han Prize.

Walter was also influential in the founding of GSI. I quote from Peter Braun Munzinger who knows the history:

"GSI was founded in 1969 by members of the surrounding universities: Darmstadt, Frankfurt, Heidelberg, Giessen and Marburg. Walter was one of

the founding fathers and had a special relation with the GSI theory group... At the beginning he devloped the two center shell model to deal with the structure of heavy nuclei, fission and fusion. This was very influential. It not only provided the arguments why to try "cold fusion" for superheavy production, but also led to the positron story"

Walter has written a comprehensive course on theoretical physics, of depth and completeness which in my opinion is comparable with Landau and Lifshitz. When I checked on Amazon, there were 46 titles listed under Walter's name. This represents a tremendous accomplisment. (The covers of the books are in color, too!)

Walter has also produced a phenomenal number of high-quality PhD's, and a large number of whom have gone on to become professors at major univerities.

The professors are:

Class of 65: Harmuth Arenhovel, Mainz; Hans Jurgen Weber, Virginia
Class of 66: Wilhelm Pieper, Giessen-Friedberg
Class of 67: Christian Toepffer, Erlangen-Nurnberg, Werner Schied, Giessen
Class of 68: Ulrich Mosel, Giessen
Class of 70: Burkhard Fricke, Kassel, Dietmar Kolb, Kassel, Paul-Gerhard Reinhard, Erlangen-Nurnberg
Class of 71: A. Grauel, Paderborn
Class of 72: Karsten Prust, LBL, Eligal Mshelia, Balewa University, Nigeria
Class of 73: Jochim Maruhn, Frankfurt, Berndt Muller, Duke, Johann Rafelski, Arizona
Class of 77: Volcker Oberacker, Vanderbildt, Gerhard Soff, Dresden
Class of 79: Horst Stoecker, Frankfurt
Class of 80: Ulrich Heinz, Ohio, Peter Hess, Autonomous University, Mexico, Michael Soffel, Dresden
Class of 85: Andreas Shafer, Regensburg
Class of 89: Stefan Schramm, Frankfurt, Gunter Plunien, Tech. U. Dresden, Klaus Geiger, BNL
Class of 92: Christoph Hartnack, Nantes
Class of 93: Dirk-Hermann Rischke, Frankfurt
Class of 94: Jurgen Schaffner-Bielich, Frankfurt
Class of 96: Eckart Stein, Maharishi University
Class of 97: Michael Meyer-Hermann, FIAS, Adrian Dumitru, Frankfurt,

Steffen-Ashraf Bass, Duke
Class of 98: Markus Bleicher, Frankfurt

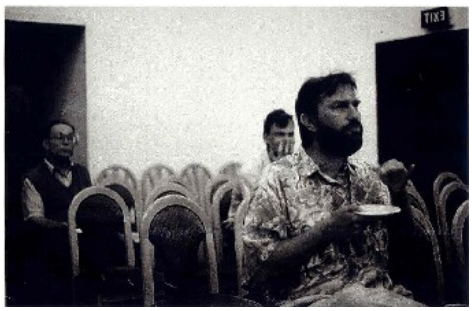
The PhD students are:

1965: Hartmut Arenhovel, Hans Jurgen Weber; 1966: W. Donner, R. Ligensa, Wilhelm Piper; 1967: Christian Toeppfer, Werner Schied; 1968: Ulrich Mosel; 1969 P. Anthony Spiess, Bernd Fink, A. Rabie; 1970: Burkhard Friske, Gothard Gneuss, Paul-Gerhard Reinhard; 1971: A. Gruel, Hartmut Helm, Karl Roos; 1972: K. Albrecht, Bernhard Blum, Karsten Pruss, Horst Stock, Eligel Mshelia, Peter Holzer; 1973: Herbert Diehl, Hans-Joachim Fink, Jens Grumann, Joachim Maruhn, Berndt Muller, Johann Rafelski; 1974: Axel Kappatsch, Tihomur Morovic; 1975: Vida Maruch, Herbert Ruck; 1976: Olaf Krause, Piet-Tijing Ong, Ulrich Schneider, M. Sedlmayer, Rolf Sedlmayr; 1977: Volcker Oberacker, Viola Ruck, Hans-Joachim Scheefer, Gerhard Soff; 1978: Ludwig von Bernuss, Gerhard Heiligenthal; 1979: A. R. Degheidy, Jurgen Hofman, Hans-Jurgen Lustig, Angelika Muller, Horst Stoecker; 1980: Wilfired Bets, E. Elsayed Alv, Ulrich Heinz, Peter O. Hess, Johannes Kirsch, Joachim Reinhardt, Wolfgang Shafer, Michael Wolfgang Soffe; 1981: Nagwa Abou El Naga, J. W. Gurguis, Heinrich Peitz; 1982: Joseph Haha, Rainier Konnecke; 1984 Gerd Buchwald, F. Kristinkovics, Udo Muller, Jurgen Theis; 1985: Peter Gartner, Gerhard Graebner, Andreas Schafer, Paul Schluter, Martin Seiwert, Davi Vaak; 1986: Peter Kocjh-Steinheimer, Karl-Heinz Wieschorke; 1987: E. Elsasser, Gunther Staadt, Mark Uhlig, Theo de Reuss; 1988: Gerhard Mehler, Tobias Rentzsch, Albrecht Rosenhauer, Arur Thiel, Jurgen Fink; 1989: Michael Rufa, Richard Hermann, Karl Depta, Sefan Schramm, Wolfram Schmidt, Gunter Plunien, Klaus Geiger, Andre Paulus; 1990: Walter Ludwig Niese; 1991: Christian Dereht, Stefan Graf, Harold Klein, Belas Waldhauser; 1992: Dirk Troltenier, Thomas Schonfeld, Georg Peiler, Christoph Hartnack; 1993: Jurgen Augustin, Andreas von Ketiz, Dirk Hermann Rischeke, Dietmar Shnabel, Volker Blum, Oliver Graf, Dieter Neubauer; 1994: Maria Berenguer, Alexander Scherdin, Ulrich Katscher, Christian Hofmann, Jurgen Klenner; 1995: Kordt Gripenkerl, Mario Vodovic, Raffael Mattielo, Andre Jahns, Bruno Ehrnsperger; 1996: Stefan Michael Schneider, Jens Konopka, Eckart Stein, Luke Winckelmann, A. Bischoff; 1997: Michael Meyer-Hermann, Adrian Dumitru, Steffan-Ashraf Bass, Christian Spieles; 1998: Panajotis Papazoglou, Klaus-Jurgen Lutz; 1999: Markus

Hoffman, Markus Bleicher; 2000: Jorg Brachmann, Sven Soff, Nils Hammon, Ulrich Eichmann; 2001: lars Gerland; 2002 Thomas Burvenich, Anto Sulakono, Hennig Weber

Walter is known as an excellent teacher with a strong interest in his students' welfare and scientific development. In 1996, he gathered together for the photo in Fig. 24a in George South Africa. This was at a meeting celebrating his 60'th birthday. In Fig. 24b, you see a typical lecture to his more senior students.

(a)



(b)

Figure 24: a Walter and students in South Africa b Attentive Frankfurt senior students.

I honestly do not understand how Walter has had the time to accomplish all that he has done. In addition to his academic achievements, Walter is a committed family man. In Fig. 25,is a picture of his two sons Martin and Carston.

Walter is in the same class and traditions of academics as that of Goethe:

Goethe's aim was to make life a concrete example of the full range of human potential, and he succeeded as few others did.

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In Fig. 26, Goethe is shown as a young man, and as an old man. He had energy, drive and accomplishment throughout his career.

Figure 25: Martin and Carston in 1996.

a b

Figure 26: Portraits of Goethe as a young man and and old man.

6 Poem for Walter

I tried to find a poem which expresses my understanding of Walter's career, but could not find one I thought appropriate. So I decided to write one. I worked hard on it, but wasn't satisfied with the result. I showed it to Alice. A professional writer, she succeeded in giving it proper rhyme and meter while preserving its basic flow of ideas. Here it is, a gift to Walter on this occasion from the two of us.

The Physicist at Seventy
For Walter Greiner

Another morning, and somehow I find
it hard to wake from images that seem
so vivid. Was it really but a dream?
The echoes still resound within my mind.

A painter might have dreamed as I once did
when I was young: in flows of hues and forms,
Eager to try new paths beyond stale norms,
I sought to find where truth and beauty hid.

Rare times a phantom stepped to vivid light
and let me capture all its grace. I drew,
to show the world its face. Yes, it was new!
And others nodded, sharing my delight.

Hoping to make a structure that would last,
a kind of architect I next became-
aware, like all, that nothing man can frame
remains immutable as years speed past.

I sigh and let myself drift nearer sleep -
allowing phantoms of a different kind
to pass in sweet succesion through my mind
and promise there are things that man may keep.

I see again the faces we once brought
into this world - we two, I and my wife. . . .
The faces change, for life gives birth to life;
they blend with those of seekers I have taught.

New comets mount into the sky and shine;
familiar structures change, and new ones rise -
the dreams survive. They glow in younger eyes.
I recognize those dreams, they still are mine.

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