



# Spin Phenomena Interdisciplinary Center

globally connecting nature,  
cultures, and people



## Programm

### **Willkommensrede:**

Präsident Prof. Dr. Georg Krausch  
Johannes Gutenberg Universität

Staatssekretär Prof. Dr. Deufel  
Ministerium für Bildung, Wissenschaft, Weiterbildung und  
Kultur, Rheinland-Pfalz

Generalsekretär Dr. Hesse  
Alexander von Humboldt Stiftung

Prof. Dr. Jairo Sinova  
Direktor von SPICE  
Johannes Gutenberg Universität

Prof. Dr. Matthias Neubert  
Direktor von MITP und Koordinator von PRISMA  
Johannes Gutenberg Universität

### **Empfang**

## Welcome Speech to the Spin Phenomena Interdisciplinary Center

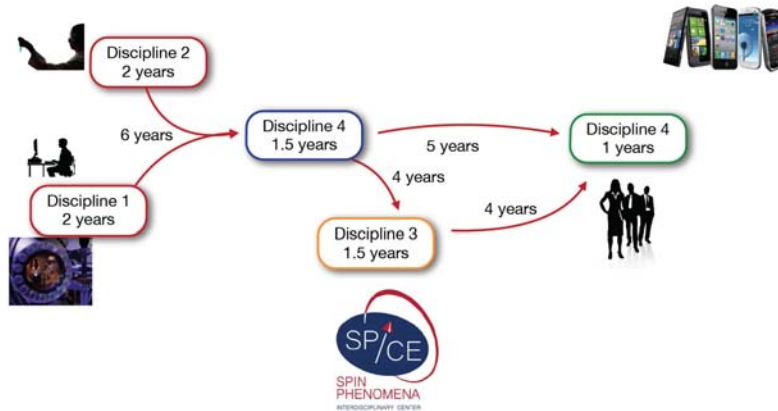
Sehr geehrter Herr Präsident, sehr geehrte Ehrengäste, Kollegen und Freunde,

es ist mir eine Ehre, heute hier zu sein und Sie zur Eröffnung des Spin Phenomena Interdisciplinary Center begrüßen zu dürfen. In den nächsten Minuten möchte ich mit Ihnen die Vision dieses neuen Zentrums teilen. Obwohl ich meine Rede gern auf Deutsch mit meinem eigenen Mainzer Akzent halten würde, ist es noch nicht möglich. Ein Jahr reicht nicht aus, um Deutsch mit perfektem Mainzer Akzent zu lernen. (Wobei ich glaube, dass ich während der Fastnacht dieser Perfektion ziemlich nahe gekommen bin). Ich bat den Präsidenten Prof. Dr. Krausch, Prof. Dr. Deufel, Dr. Hesse, und Prof. Dr. Neubert, ihre Reden auf Deutsch zu halten. Aber, um verständlich zu sein, werde ich die nächsten 10 Minuten auf Englisch sprechen. Ich bitte um Ihr Verständnis. Ihre deutsche Version fanden Sie bereits auf Ihren Plätzen. Diejenigen, die kein Deutsch sprechen und Schwierigkeiten haben, mein Englisch zu verstehen, sollten währenddessen an das leckere Essen und die ausgezeichneten Weine aus der Mainzer Region denken, die Sie in wenigen Minuten erwarten. Lassen Sie uns anfangen!



The smartphones that keep you connected, the Internet with which you Google everything, the GPS in your car that guides you to places, the Cloud that keeps it all connected, and all of the smart technology that you rely on every day, are based on advance materials. These materials originate from fundamental science discoveries, many of them initiated here at the Universities. But unfortunately it takes 20 years or more for them to end in your hands, ready to use. One of the grand challenges of the new millennium is how to shorten this time.

**How to shorten this time? Where is the bottle neck?**

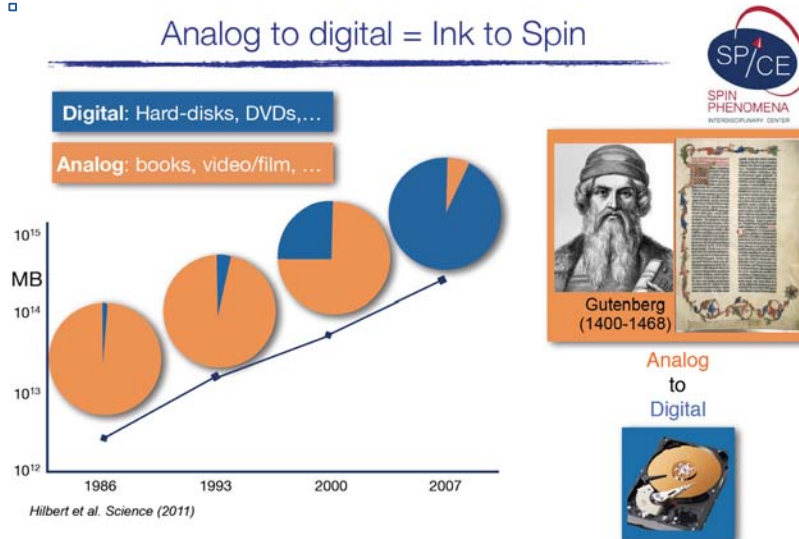


**Mission: actively merge fields researching spin related phenomena**

The key problem is that in the process of discovering and developing advance materials there are many disciplines involved, even at the first stages of fundamental science done here at the Universities and Basic Research Institutes. Within a given discipline we are already very fast and efficient. What takes the longest is the time for these disciplines to break down the barriers so they can communicate efficiently in order to make the key connections that takes them to the next step.

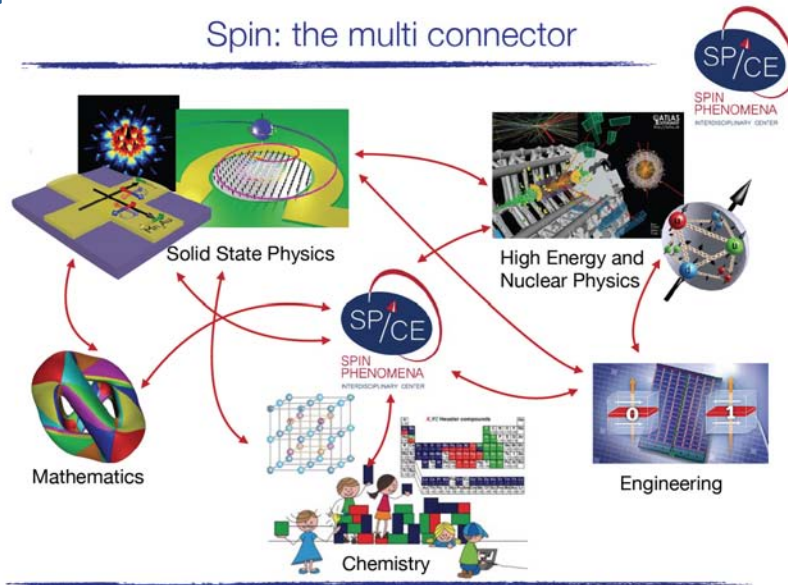
The Spin Phenomena Interdisciplinary Center (SPICE) tackles this grand challenge directly. The mission of SPICE is to directly and actively merge different scientific fields researching the area of spin related phenomena, so they can spring new directions and new opportunities. We focus on the area of spin phenomena for two reasons.

**Analog to digital = Ink to Spin**



The first reason is that spin is the basis of today's information storage technology. The transformation from analog to digital storage was effectively a revolution of converting from ink to spin. It is an area that holds the promise for faster electronics, for new high capacity memories, and for new ways to create advanced materials-by-design.

### Spin: the multi connector



The second reason, and just as important, is that spin is a very broad area relevant in many aspects of fundamental science, not just advance materials research. It is relevant for solid-state physicists, high energy and nuclear physicists, chemists, mathematicians, and engineers. Our goal is to prove that the inter-connected focused approach of SPICE can create an environment that will enable unconventional perspectives, break down barriers, and allow the scientists to look beyond the borders of their own disciplines.

But to create a center with such an ambitious goal we need visionary partners that share the same spirit. The spirit of Johannes Gutenberg University, that moves minds and crosses boundaries into new frontiers. The spirit of the Alexander von Humboldt Stiftung, that invests on outstanding people and a world-spanning network of excellence. The spirit of das Land Rheinland-Pfalz, that leads to positive global dynamic changes starting from local initiatives. Their spirit is embodied in two historical giants: Johannes Gutenberg and Alexander von Humboldt.

### SPICE sponsors



JOHANNES GUTENBERG UNIVERSITÄT MAINZ



## Johannes Gutenberg



1398-1468

Johannes Gutenberg, a Mainzer and aptly named the man of the millennium, brought humanity out of the dark ages. Starting from a local initiative, he created the first world-wide communication revolution that helped spread knowledge and science globally.

## Alexander von Humboldt

“the last Renaissance man”



*Humboldt.* 1769-1859

The other giant is Alexander von Humboldt. He was an explorer and a scientist with boundless energy, who served as inspiration and catalyst for young scientists globally. He tried, above all, to find the inter connections underlying in nature, the different sciences, their cultures and their people.

He pioneered the “Research a la Humboldt”. A mode of doing science that focuses on bridging gaps and connecting the different disciplines. In the last century, as the different fields of science specialized and created more barriers between them, this mode went out of fashion. But if we want to succeed in the grand challenge of accelerating the pace of scientific discovery and its impact in society, we must return to this renaissance style of “Research a la Humboldt”. SPICE aims to follow and promote this spirit of “Research a la Humboldt”.



It also aims to add to the reputation of scientific excellence of Johannes Gutenberg University and das Land Rheinland-Pfalz. I emphasize here the words “to add”, and not the words “to bring”, because excellence, and the ambition to continue surpassing that excellence, is already present here at a very high degree. Indeed, to establish SPICE here would not be possible otherwise. In an environment that has the Graduate School of Excellence Materials Science in Mainz, the Cluster of Excellence PRISMA, which leads the Mainz Institute of Theoretical Physics (MITP), the Gutenberg Research College, the center of innovative and emerging materials (CINEMA), and the strong partnership with the Technische Universität Kaiserslautern in spin-phenomena research, it is clear that SPICE must flourish. It is in this environment and with the support of the Institute of Physics, that I believe the ambitious goal of SPICE can be reached.



Organizes activities and workshops that foster emergent areas of research that combine and connect the strengths of different fields.

But now it is time to tell you a little more about what SPICE has to offer and how we plan to achieve our goals. SPICE offers resources to host scientific **workshops** and **schools**, which actively merge different fields and disciplines.

□ • **Workshops and Schools**



- Learning across the disciplines.
- Promote young researchers.

• **Visitors program**



• **SPICE Young Research Leaders Group Workshops**

The top talent of the new generation. From Princeton, Cornell, Dresden, Weizmann, Perimeter, Caltech, ...



These workshop and activities, which we already have quite a few planned for 2015, must involve learning across the disciplines that go beyond just giving talks about each discipline. In all our activities a mixture of high level tutorials and scientific talks have to be given in order to make communication efficient. We also require that the top young researchers make up at least 1/3 of the speakers and leading participants.

We also host visitors that want to collaborate with the local research focusing on this type of synergy. Several have already taken advance of this opportunity. One of them is Thierry Valet, who has been recently selected as the 2015 Visiting Professor of the graduate school of excellence MAINZ in partnership with SPICE.

But one unique format, which I find particularly exciting and is not present in any other center, is the **Young Research Leaders Group Workshops**: here the leading coordinators and participants are top level young researchers, coming together to explore new possibilities and challenges that will define future directions in science. It focuses on the directions that the elite of the next generation wants to lead. The inaugural workshop planned for this August features young highly talented assistant professors and top-level postdocs from Princeton, Cornell, Perimeter Institute, etc.

We encourage anyone interested in SPICE and its mission to get involved with us. We are already working with the Graduate School MAINZ and other groups to organize some of these activities. I am also very excited about the beginning of a closer partnership with the Mainz Institute of Theoretical Physics (MITP) to exploit common goals and synergies in the future. We hope that other groups and institutions within the University and the region share in this vision and want to join and lead some of the activities as well.

It is together that we can globally connect nature, cultures, and people. It is together that we can make Mainz and Germany a magnet for the top dynamic scientists in the world. It is together that we can move minds and cross boundaries.

I thank you all for being here today in this inaugural event and this exciting beginning.

Jairo Sinova