

# RESUME & STATEMENT – Dr. MAKSYM TITOV

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## **Professional Resume**

Maxim Titov was born on May 6, 1973 in Kyiv, Ukraine. He received PhD (“Muon System in the HERA-B Experiment”) from ITEP, Moscow in 2001, having carried out research in particle physics at DESY Hamburg, and completed his Habilitation (HDR) in 2013 from the University Pierre and Marie Curie (Paris VI). Today, he is a Director of Research at CEA Saclay, France. A nuclear and particle physics researcher during his 30-years scientific carrier, Dr. Titov worked in both the development of advanced detector concepts and analyses of physics data from collider experiments, inevitably within the large international collaborations: HERA-B Experiment at DESY Hamburg; D0 Experiment at FERMILAB; ATLAS, CMS Experiments and RD51 Collaboration at CERN, International Linear Collider Project (ILC) in Japan, and Particle Data Group (PDG) Collaboration.

Dr. Titov personal contributions to experimental particle physics is reflected in a number of publications on Standard Model Higgs Boson and Beyond the Standard Model physics. In the field of instrumentation, he is an author of monographs on innovative detector concepts, reviews on gas detectors for the Particle Data Group (jointly with Fabio Sauli), and a co-editor of the Handbook of Particle Detection and Imaging. He has followed a variety of large-scale projects from conceptual design studies, through construction, assembly, problem identification, system integration to commissioning and maintenance of complex detector systems. Maxim Titov is a member of numerous international committees and advisory boards, dealing with technology, cost schedule and planning issues (KEK Belle-II Advisory Committee, INFN Technical-Scientific Council, EIC Generic Detector R&D Committee). More recently, Dr. Titov was appointed by the European Laboratory Directors Group (LDG) as the Chair of the Panel on “Sustainability Assessment of Future Accelerators”.

An important component of Dr. Titov experience includes management of large collaborations and involvement into science-diplomacy matters. *He was one of the RD51 founding members, the RD51 Co-Spokesperson (2023 & 2007-2015), and the RD51 Scientific Secretary (2016-2022).* He also served as a liaison (2013-2016) between Ukraine (Ministry of Science and Education / Ministry of Foreign Affairs) and CERN, facilitating the ratification process for the Associate Membership of Ukraine at CERN and contributed to the global efforts to facilitate science diplomacy discussions between Japan, US and Europe Parliament delegates for the ILC project.

## **Transition from RD51 towards “All Gaseous Detectors” DRD1 Collaboration**

Emerging novel technologies are the vital backbone for the success of the upcoming large and complex particle physics experiments. MPGDs have become a well-established technique in the fertile field of gaseous detectors. Many intensive R&D activities and their diversified applications have been pursued within the world-wide CERN-RD51 collaboration (90 institutes in 25 countries), in charge of the development and dissemination of the MPGDs since 2008. The success of the RD51, achieved in 15 years of activities so far and approved by CERN until the end of 2023, was related to the RD51 model in performing R&D: combination of generic and focused R&D with bottom-up decision processes, friendly environment to facilitate networking activity, full sharing of experience, “know-how”, and common infrastructure, which allowed to build community with continuity and institutional memory, and enhanced the support of education and training of younger generation instrumentalists.

During the ECFA Detector R&D Roadmap implementation process in 2023, RD51, and its scientific and management teams, have served as the “nuclei” for the new “bottom-up” DRD1 collaboration, allowing to bring together “all gas detector” communities (Large Volume Detectors, MPGD, RPC, TPC, Wire chambers). Many challenges faced by different technologies are shared, and there is a potential for overlapping in many areas, allowing a larger community of gaseous detectors to benefit. The DRD1 scientific proposal structure, prepared by the DRD1 implementation team, contains well-integrated major RD51 assets: Working Groups (WG) - the core of the collaboration and a scientific platform to build community, Common Projects, R&D Tools and Facilities, while opening many opportunities for the transversal activities between different gas detector communities and new strategic R&D, organized in Work Packages (WP). We must express a big appreciation to the entire DRD1 community for the great teamwork, which allowed to shape the “legacy document” for gaseous detector domain for decades to come. Looking ahead, we need to make sure that, over the years, the DRD1 scientific environment will remain attractive to groups from neighboring fields (e.g. nuclear physics, astrophysics, etc ...) and small-scale “blue-sky” generic R&D projects, in addition to the large-scale future facilities, while DRD1 collaboration continues to keep the global scale and openness to all geographic regions, as it was always the case for the RD51.

## **DRD1 Collaboration Matters – Spokesperson (SP) Team Role**

The Spokesperson is first and foremost the diplomatic voice of the collaboration. (S)he has a representative role and (s)he should both lead and also express as much as possible the opinion of the collaboration, based on Collaboration Board (CB) decisions. This is a huge endeavor that requires strong scientific and management teams and, most importantly, scientific expertise, broad experience, knowledge of human nature, and the careful consideration of different points of view. In my opinion, the SP of such a large collaboration of 150+ institutions, 30+ countries needs to have several dimensions during the challenging DRD1 start-up phase:

- **The SP is the Ambassador of the DRD1 Collaboration to the world outside.** The SP, understanding the very wide range of DRD1 community needs, has to defend collaboration interests in interactions with DRDC committee and other review bodies, funding agencies (FA) and CERN directorate, to maintain excellent relations with other CERN collaborations, and to represent DRD1 externally. One of the key tasks of the DRD1 SP team will be timely interactions with institutes and FA to finalize and sign the MOU in 2024, which will allow to advance WG activities and establish DRD1 Common Fund without any further delay. The next two years will also see the approval of DRD1 WP annexes – an important milestone for strategic R&D program – which will require in-depth deliberations with FAs and Finance Bodies.
- **The SP and CB Chair Teams have to set up DRD1 Collaboration Structure in a timely manner.** In order to effectively advance DRD1 activities in 2024, including smooth RD51 to DRD1 transition, the SP and CB Chair teams have to propose the STRATEGY of how the collaboration organization might look like – in a wide consultation with DRD1 community - and pave the road towards setting up the collaboration structure and implement it. In addition to the SP, CB Chair Teams and Collaboration Board, the following bodies could be envisaged in DRD1: Technical Coordinator, Scientific Coordinator, Finance/Resource Coordinator, Management Board, Finance Board and Scientific Coordination Board. The latter could serve as an executive body to ensure fair representation and coordination of transversal scientific activities among “all gas detector communities, including diversity aspects (e.g. young researchers).
- **The SP has to listen, lead the collaboration, and make decisions.** This translates into four major actions: oversee the progress of the DRD1 WG and WP, consult, inform, and finally make decision. Often a number of iterations with DRD1 institutes and CB team will be necessary. The CB is the place where the long term strategies and policies of the collaboration are decided. This is the only way that a large collaboration of volunteer scientists, from independent FA, can be motivated to follow a common goal.
- **The SP has to coordinate and manage the collaboration.** DRD1 leadership will require breadth of experience and a good knowledge of all aspects of gas detector domain. Consensus between management and the wider DRD1 community is fundamental for the efficient and harmonious fulfilment of our ambitions: my wish is that the choice of the WG conveners and WP conveners reflects this goal and includes fair representation of “all gas detector” communities (Large Volume Detectors, MPGD, RPC, TPC, Wire chambers). We also have to make an effort to “discover” people in DRD1 for the right responsibilities, by personal and direct contact with the groups. I strongly believe in a management style based on real delegation and I am against of any form of micromanagement. This attitude should percolate at all levels: people should feel empowered in their roles and be able to take decisions. The spokesperson will continue to be responsible in front of DRD1 community for the outcome of all decisions.
- **The SP has to find the way towards maintaining community-driven “enjoyable DRD1 scientific environment to work on and the passion for gaseous detectors”.** Communication and Engagement is a very important part of the DRD1 Collaboration and we should continuously strive to improve them, while fairness and transparent decision process with respect to all gas detector communities should be the key leitmotiv of the DRD1 management. The goal should be to improve awareness not only about decisions, but also of the context and reasons behind them. Continuous interaction with the CB is particularly important. Equally important is the bottom-up flow of information.

## **Personal Statement**

***“Ne perdez jamais patience, c’est la dernière clé qui ouvre la porte ...” (d’Antoine de Saint-Exupéry)***

My carrier and research interests show how much I value and enjoy all aspects of experimental particle physics, pushing technological and social boundaries, from physics analyses to modern technologies and to advanced large-scale accelerator projects. I’ve constantly tried to extend my experience and always looked for the most compelling opportunities and never said “no” to the challenge. Today, advanced detector technologies are key to address future

science questions and their development is based on our understanding of fundamental laws of physics. Recent discoveries of the Higgs boson and Gravitational Waves required increasingly sophisticated detectors and have created an exceptionally positive environment in society. Thus, we have a “virtuous cycle” which must remain strong and un-broken – laws of nature enable novel detector and accelerator concepts and techniques, which in turn lead to a greater physical discoveries and better understanding of our Universe – and this conviction has been the guiding thread in my research career. The environmental credentials of future detectors are also increasingly in the spotlight. Society is the principal client, and many of the accelerator innovations and modern detector technologies are vital for applications beyond particle physics.

I will be always available to listen and talk to the collaboration in order to define strategic planning and build consensus for our next steps and priorities that ensure we fulfill DRD1 goals in an ambiance of collegiality, cooperation and greater intellectual freedom. Based on my past experience in RD51 and other international collaborations and deep understanding of the CERN environment, I'll take a leading role to propose the strategy and the structure of the DRD1 collaboration, if you do me the honor of electing the spokesperson. Together, united, we can emerge stronger and define DRD1 path to success.

December 5, 2023



Maksym Titov