



## UNIVERSITY OF HAWAI'I AT MĀNOA

### Laboratory of High Energy Physics and Astronomy

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Dear Professor Tsenov, dear Professor Kekelidze,

It is with great pleasure that I write this letter of recommendation for Dr. Amaresh Datta who is applying for your Distinguished Postdoctoral Researcher position in the Laboratory of High Energy Physics at JINR, Dubna. Dr. Datta is a postdoctoral researcher in my research group at the University of Hawai'i at Manoa since August 2015. My group focuses on the first-time detection of cosmic-ray antinuclei for the purpose of dark matter identification. Dr. Datta is the backbone of many of these efforts and a highly knowledgeable and experienced experimental (astro)particle physicist. He works very independently, systematically, finds creative solutions, and is very goal oriented. At the same time, he is also easy to collaborate with and is great at sharing his knowledge with colleagues and students.

I initially hired Dr. Datta to build up my group's involvement with the NA61/SHINE experiment for the purpose of reducing uncertainties of antiproton and antideuteron production cross sections in proton-proton collisions. The results will boost the interpretation of cosmic-ray antiparticle data. Dr. Datta was selected for this postdoctoral position because of his expertise with hadronic/nuclear physics with the PHENIX experiment. His other references will comment on this very relevant aspect for his application. As he was not joining a pre-existing NA61/SHINE effort in my group, he had to very independently learn all experimental tools and build up his analysis framework. Dr. Datta did this very quickly and efficiently. During this time, he also introduced a new graduate student to the NA61/SHINE analysis and effectively collaborated with him. Although my group is involved in three different experimental efforts (AMS-02, GAPS, NA61/SHINE), I maintain a very collaborative spirit between the group members. In 2016, another postdoctoral researcher who was focusing on the deuteron and antideuteron analysis for the AMS-02 cosmic-ray experiment left the group and Dr. Datta continued his analysis. As he did for NA61/SHINE before, it was remarkable to witness how quickly Dr. Datta learned the AMS-02 analysis tools. Within a short amount of time he was able to make important contributions. One of his major products for AMS-02 will be the deuteron flux analysis. It is important to note that internal AMS-02 collaboration policies do not allow for the publication of this study before Dr. Datta will leave the group. On the more theoretical side, he was very active in the collaboration with our Mexican colleagues from UNAM to develop an improved (anti)deuteron coalescence model based on older data, which led to a publication in Physical Review D. He also co-authored numerous AMS-02 publications and one NA61/SHINE publication.

Dr. Datta is very proficient with all the relevant computing tools like C++, ROOT, Linux, etc.. He is very well-versed in statistical data analysis, and in particular in techniques for searches for rare

events. As it seems typical for every dark matter search, I envision that this is also key requirement for your approach.

The NA61/SHINE experiment and the AMS-02 headquarters are both located at CERN. During his time in my group, Dr. Datta spent many months at CERN to closely collaborate with other collaboration members as well as to participate in collaboration meetings and data taking for both AMS-02 and NA61/SHINE. He gave many clear and convincing presentations at collaboration meetings and acted as an essential link between Hawaii and our efforts at CERN.

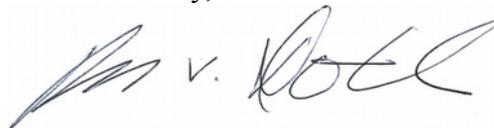
Dr. Datta is also instrumental in working with graduate and undergraduate students in my research group. He supervises many of the day-to-day activities, e.g., in-depth discussions of underlying physics, our analysis frameworks, and our computing infrastructure.

Furthermore, during his time in Hawaii Dr. Datta substituted several lectures for me. He is a very engaged teacher and is an effective instructor. Dr. Datta is very committed to outreach efforts and he was also involved in several of our department's and my group's community outreach efforts like open houses and high school programs.

In summary, Dr. Amaresh Datta is a very versatile (astro)particle physicist. He adapts to new challenges very quickly and draws from his experience from three experiments (PHENIX, NA61/SHINE, AMS-02) with different physics focuses. I expect him to continue making significant scientific contributions to (astro)particle experiments in the future.

Furthermore, it is important to point out that he is leaving my group only because his U.S. exchange visitor visa cannot be further extended. Otherwise, I would have liked to keep him in my group. Please do not hesitate to contact me if you have any further questions.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'P. von Doetinchem', written in a cursive style.

Philip von Doetinchem  
Associate Professor