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To Whom it may concern:

Dr. Igor V. Moskalenko is a Senior Staff Scientist at Stanford University since 2005. He is a world-leading expert in Astrophysics of cosmic rays and associated diffuse emissions. His papers and his state-of-the-art model for propagation of Galactic cosmic rays and diffuse emissions, GALPROP, have led to a major breakthrough in Astrophysics. The GALPROP model developed by Dr. Moskalenko together with Dr. Andrew Strong of the Max-Planck-Institute for Extraterrestrial Physics is currently the "standard model" used by many experimental groups, such as *Fermi* Large Area Telescope (*Fermi*-LAT), Alpha Magnetic Spectrometer – 02 (AMS-02) on the International Space Station (ISS), Advanced Composition Explorer (ACE), the Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics (PAMELA), High-Altitude Water Cherenkov Observatory (HAWC), and thousands of other scientists world-wide.

The GALPROP model calculates Galactic propagation of all stable and long-lived isotopes from H to Ni, antiprotons, electrons and positrons, their disintegration and energy losses, production of secondary particles and isotopes, as well as generation of associated diffuse emissions (radio- through gamma rays). The model developed by Dr. Moskalenko is the most advanced and the most realistic so far. This is the first fully numerical self-consistent model developed to describe the Galactic cosmic ray phenomenon in the wide energy range, from sub-MeV to multi-TeV, that has been demonstrated to work excellently and could be used to make theoretical predictions of different kinds. This is a tremendous work. Nothing close to that was accomplished before.

The key concept underlying the GALPROP code is that various kinds of data, e.g., direct CR measurements including primary and secondary nuclei, electrons and positrons, gamma rays, synchrotron radiation, and so forth, are all related to the same astrophysical components of the Galaxy and hence have to be modeled self-consistently. The goal for GALPROP-based models is to be as realistic as possible and to make use of all available astronomical information, nuclear and particle data, with a minimum of simplifying assumptions. The GALPROP model provides a unified framework for the interpretation of data collected by many different kinds of experiments.

Dr. Moskalenko has published 282 papers in major Astrophysical journals. The primary scientific importance of his results is evidenced by the large impact factor of his papers. According to the Thomson Reuters ISI Web of Science, Dr. Moskalenko's total citation count exceeds 21 000, his Hirsch index is 82, while a dozen of his papers each have citations significantly in excess of 300. Dr.

Moskalenko's contribution to Astrophysics of cosmic rays and to gamma-ray Astronomy was recognized by his election as a Fellow of the American Physical Society (2010) with a citation: "For his seminal contributions to gamma-ray astronomy, for making self-consistent computations of high-energy charged particle and gamma radiations from the Galaxy and for making such calculations accessible to the astrophysics community worldwide." Besides this recognition, Dr. Moskalenko was a co-recipient of the Bruno Rossi Prize (by the American Astronomical Society, 2011) with citation: Awarded to "Bill Atwood, Peter Michelson and the Fermi Gamma-Ray Space Telescope/LAT team for enabling, through the development of the Large Area Telescope, new insights into neutron stars, supernova remnants, cosmic rays, binary systems, active galactic nuclei and gamma-ray bursts," and two NASA's Group Achievement Awards: "For outstanding collective effort over many years which produced a preeminent scientific instrument (GLAST) that will advance NASA's space sciences mission" (2008), and "For the successful launch and early operation of the Fermi mission and discover of the new high energy gamma ray sources" (2010).

Papers by Dr. Moskalenko meet the toughest scientific standards and always represent new ideas and independent thinking. Dr. Moskalenko clearly deserves an award of the highest scientific rank, such as Doctor of Sciences in Physics.

Sincerely,

Peter F. Michelson
Luke Blossom Professor in the School of Humanities and Sciences
Chair, Department of Physics