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Jury Lopez-Loreta Prize

Berlin, March 6,2022

Recommendation letter for Andrea Brugnoli for Lopez-Loreta Prize

Ladies, gentlemen and member of the jury,

I am happy to provide a recommendation letter for Andrea Brugnoli.

Let me first quickly introduce myself. I hold a Chair for Numerical Analysis at the Technical University of Berlin and head a group of 15 researchers. I have been for 8 years Chair of the DFG Research Center **Matheon** Mathematics for key technologies in Berlin, member of the mathematics panel of the European Research Council, and I am editor of several journals in Numerical Analysis and Linear Algebra as well as editor-in-chief of *Linear Algebra and its Applications*.

I have devoted a large part of my scientific life to the development of scalable numerical algorithms for industrial applications. To push our scientific and technological understanding, computational science and enginnering plays a fundamental role, to avoid expensive and complicated experimental procedures to gain insights on the phenomena one wishes to model. I strongly believe that advances in computational mathematics and scientific computing will play a major role in the industry of the future.

The MORPHEUS project presented by Andrea Brugnoli is a very promising computational project, as it tries to establish a link between structured physical description of multiphysical problems, together with sophisticated numerical algorithms for the digitalisation of the resulting models. The employment of techniques that capture the underlying physics correctly is crucial for high-fidelity simulation. Furthermore, the computational tools developed by the Artificial Intelligence community possess a strong potential to obtain reduced models capturing the properties of the full order counterpart. I strongly believe that this project may provide important tools for the engineering challenges of the future.

Technische Universität Berlin

With this letter, I want to express my strong interest in the MORPHEUS project and strongly support the application of Andrea Brugnoli.

Yours sincerely

Volker Mehrmann