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To whom it may concern,

This is an evaluation of the Martin Kozak's habilitation thesis on stimulated inelastic interactions between free-electrons and light. I was already familiar with Martin's publications and have read with great pleasure this thesis. I will start with my overall assessment that this work is very impressive both by quantity and by quality and I consider this habilitation thesis of the highest caliber.

There are two main motivations for the research described in the thesis and each one of them has its own merit and fits nicely in the wider scientific community. On one side, the efforts to establish interaction schemes between electron beam and laser waves are key to access attosecond time-scales and manipulate the electron wavefunction. There is a large body of research touched by Martin's efforts, ranging from the study of Floquet states in condensed matter to photoinduced near field electron microscopy. In particular, Martin's original idea of exploiting non collinear Compton scattering is impressive as in the scheme, the interaction occurs in the far field and therefore is not limited by laser damage on dielectric material or any other boundaries. This is explained well in the thesis and the associated papers. Knowing well the other mechanisms of laser-electron coupling (for example dielectric laser acceleration) Martin quickly understood the potential fo the scheme and is able to highlight the relative advantages and disadvantages.

The other driving motivation for Martin's work is high gradient electron acceleration. Even though the field was born around the idea of increasing the energy of future linear colliders, this technology finds more and more applications beyond high energy physics carrying the potential for breakthrough advances in a variety of fields. Most of the effort in this direction took place during Martin's postdoc years when he was at Erlangen within the framework of the ACHIP collaboration. His impact on the collaboration is so profound that in recognition of his deep knowledge of the material and the challenges associated with the daunting task of accelerating electrons in micron-size channels, he has been invited to participate to the collaboration meetings and offer his insights even after formally leaving Erlangen's group.



I would mention that both of these topics are extremely ‘hot’ in research standards, attract a lot of young talent (students and postdocs) and have the attention of the funding agencies. I strongly believe that they could constitute a strong backbone for a very successful career in physics. The papers and the habilitation thesis’s clarity of exposition well reflect my experience of Martin which I have heard giving very clear and concise talks, always straight to the point and very accurate in terms of physics description.

In summary, I believe this habilitation thesis more than exceeds the requirements for this career step and I give it the highest possible ratings. Martin is a bright star in the field. We were all surprised few years back when he decided to go back to Prague as many US research institutions would have considered him for a faculty position. Still, he is well known in the international scientific community and it is my opinion that you should do everything possible to keep him happy there.

Yours sincerely,



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