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Final report from the HoloGrav exchange visit in the Wigner Center for Physics.

I visited the Wigner Center for Physics in Budapest from Monday 11th March till Sunday 31st March 2013. The purpose of my visit was to interact with the group led by Prof. Zoltán Bajnok. The subject we wanted to investigate was integrable structures in AdS/CFT correspondence with boundaries. During my visit I was involved in numerous discussions with Prof. Bajnok as well as other members of the department. Moreover, I gave a seminar about my previous work in the field of AdS/CFT correspondence.

AdS/CFT correspondence or duality is a very useful tool that may be used to analyze properties of strongly coupled conformal quantum field theories. Current research interests of theoretical physicists working in this subject embrace the studies of formal properties of the correspondence as well as applications to physical phenomena. The project carried out during my stay in Budapest was devoted to studies of the mathematical structures underpinning the duality for the operators dual to open string states attached to the so-called Maximal Giant Gravitons. Together with Prof. Bajnok we calculated the algebraic curve for the system in question from the gauge theory side. In addition we set up the calculation of the corresponding algebraic curve from the string theory perspective. Upon completion, this calculation will lead to a direct check of the correspondence. Moreover, the developed methods can be possibly applied to describe a Wilson loops in the gauge theory side which will have direct physical application. We plan to investigate this research direction in future.

My visit in Budapest led to many interactions with experts which opened several interesting research directions. I plan to pursue these directions together with Prof. Bajnok. I believe this will lead to further interactions and exchange visits between Brussels and Budapest. We intend to publish obtained results in peer-reviewed journals.

Sincerely,

Piotr Surówka