

Scientific report on visits to Bochum and Berlin.

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The purpose of my visits to Bochum was to continue working with Prof. K. Efetov and other colleagues on problems concerned with spectral analysis of Hermitian and non-Hermitian Anderson models. We continued discussing different approaches to these problems. The project at present is still at its early stage of development. The analysis of operators describing the behaviour of several electrons in a random potential turns out to be complicated but certain progress will be made relatively soon. The multi-dimensional problem with strong disorder should be solvable via Aizenman-Molchanov approach. The one-dimensional case with weak disorder seems to be a more difficult problem. We are going to continue this work during my next visit to Bochum.

During this visit to Berlin I had a number of useful discussion with Prof. J.-D. Deuschel. We are continuing our work concerned with extending the methods for the study of growth of random walks in discrete space to processes in continuous space. Certain progress in this direction has been made for the case of linear growth. As has been already mentioned in my previous report, the analysis of sub-linear growth is a much more subtle problem. It should be emphasized that very little (if any) was previously know about the behaviour of random walks with bounded jumps in continuous quasi-one-dimensional random environment. We plan to continue our collaboration in the nearest future. My next visit to Berlin should take place sometime in May-June of 2005.