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## **Advances in Scattering Kernel Development for Light and Heavy Water at Centro Atómico Bariloche**

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### **Abstract**

During the past three years we have been working at Centro Atomico Bariloche to improve the existing thermal scattering kernels for light and heavy water and produce cross sections for reactor and accelerator applications. Our work is based on the existing local experience on scattering theory, experiments and cross section generation in the last 40 years, and the newest available information on water structure and dynamics. The development is focused in three fronts: collecting and processing of microscopic information to develop improved models, either from bibliography or new experiments, proposing new methodologies to process the data, and finding integral experimental data to validate the models (again, from published data or new experiments). In this paper we will present the actual state of our models for light and heavy water, that include molecular diffusion and intermolecular vibrations and an improved approximation for coherent scattering.