

Status Report on the Low-Temperature Plasma Data Exchange Project (PDEP)

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Abstract. The open-access, on-line databases available on www.lxcat.net contain data relevant to electron and ion scattering and transport in low-temperature plasmas, in forms suitable for use in modeling such plasmas. The site was restructured in 2012, and data evaluation is a continuing activity.

Keywords: electron, ion, scattering, transport processes, low-temperature plasmas.

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The *GEC Plasma Data Exchange Project (PDEP)* is an informal, community-based project that was initiated as a result of a public discussion held at the 2010 Gaseous Electronics Conference (*GEC*), one of the leading international meetings for the *Low-Temperature Plasma* community. This project aims to address the well-recognized needs of the community to organize the means of collecting, evaluating, and sharing data for both modeling and interpreting the outcome of experiments.

At the heart of the *PDEP* is the open access website www.lxcat.net developed by researchers at LAPLACE in Toulouse, France. *LXCAT* (www.lxcat.laplace.univ-tlse.fr) (updated in 2012) distributes collections of data related to electron and ion scattering and transport in cold, neutral gases, which are critically important to modeling low-temperature plasmas. At present, 22 databases, contributed by groups around the world, can be accessed on *LXCAT*, with several others under development. On-line tools enable importing and exporting data, plotting and comparing different sets of data, and downloading data. In cases where “complete” sets of cross sections are available, the conversion to electron transport and rate coefficients can be accomplished with on-line or downloadable tools, including the Boltzmann equation solver, BOLSIG+. The steadily increasing number of contributors and users clearly demonstrates the utility and international enthusiasm for this site.

Data evaluation and authentication is key to PDEP, an activity requiring considerable community-based expertise. In a first effort, twelve researchers participated in a coordinated effort to review and evaluate data for electron-neutral scattering cross sections for rare gases. The work was reported at the *GEC 2011*. Presently under review are data related to electron scattering and transport in simple molecular targets. A review of data for more complex molecules will be undertaken in 2013. The rare-gas evaluations, to be published in 2013, are intended to serve as documentation for the on-line databases and as guidelines for the modeling community.

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