# Propositions

accompanying the dissertation

**Astrophysical plasma modeling of the hot Universe**
Advances and challenges in high-resolution X-ray spectroscopy

by

**Junjie Mao**

1. An ever-growing atomic database is required to ensure the accuracy of plasma models. Lossless compression of the atomic data might be more important to save computation time significantly (Chapters 2 & 3).
2. Without accurate density measurement, the distance, mass outflow rate and kinematic power of AGN outflows are all speculations (Chapter 4).
3. Self-consistent photoionization modeling is crucial to interpreting the continuum and all the obscuration, emission, and absorption features in the spectra of active galactic nuclei (Chapters 5 & 6).
4. Space agencies should coordinate a strategy to cross-calibrate instruments on board of different space observatories to simplify the data analysis of multi-wavelength campaigns. (Chapter 6).
5. Large space observatories with multiple instruments are essential, but we also need small ones to share some risks.
6. When the high-resolution era of X-ray spectroscopy begins in the near future, CCD spectroscopy can still be useful.
7. High-resolution X-ray spectra should be more easily viewable and accessible. TGCat is a great example, although not perfect.
8. It is absolutely necessary to have multiple groups in the world working on atomic data and plasma codes. These groups should meet more frequently to share their knowledge.
9. Software packages associated with scientific publications should be freely available.
10. Names of European colleagues are difficult to pronounce correctly and even more difficult to spell correctly.