

FINAL REPORT

COMPSTAR visit 31/10/2010 - 7/11/2010 to MPA-Garching

During my visit at MPA-Garching I collaborated with Ewald Mueller, Pablo Cerda-Duran and Michael Gabler on a common project regarding the modeling of magneto-elastic oscillations in magnetars. The excitation of such oscillations may play a role in producing the QPOs seen in the X-ray tail of giant bursts in SGRs. Our project is a continuation of our recent letter in MNRAS (<http://adsabs.harvard.edu/abs/2011MNRAS.410L..37G>) that was accepted a few days before my visit. Specifically, we collaborated on the following extensions of our work: On one hand, we investigated a larger number of models than in the above letter, in an attempt to understand the behaviour of magneto-elastic oscillations in the allowed parameter space. Varying the magnetic field strength, we determined more precisely the threshold above which magneto-elastic oscillations could break through the solid crust. On the other hand, we implemented new magnetic field configurations, allowing for magnetic fields confined to the crust. Our first results indicate significant quantitative and qualitative differences compared to the global dipole that we used in the above publications. This detailed study will allow us to refine our model of SGR QPOs and set criteria for distinguishing the conditions in the interior of strongly magnetized compact objects. We are currently working on two publications describing the above new results that came out of our recent collaboration.

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