AKjDPG 3: Hacky Hour (joint session AGI/AKjDPG)

Time: Thursday 11:00–12:30 Location: L-4.001

AKjDPG 3.1 Thu 11:00 L-4.001

WireGuard: VPN made as easy as SSH — •Frederik Lauber — Gaußstraße 20, 42119 Wuppertal, Germany

WireGuard is a new VPN system directly build into the linux kernel. Within roughly 4000 lines of code, it implements a full level 3 traffic tunneling system. With the code in net-next, it should be mainlined shortly enabling VPN on all modern linux kernels as easy as SSHing into a machine with nearly no bandwidth loss through the tunnel.

A short introduction to WireGuard will be presented. I am also planing to have a short live speed test between my Laptop and a Raspberry Pi to demonstrate its performance but am unsure at the moment if this is feasible.

AKjDPG 3.2 Thu 11:30 L-4.001

Python based USB device controlling — •Benedikt Bieringer — Institut für Kernphysik, Uni Münster, Germany

USB devices are a main part of practically every physics experiment. In this talk, multiple ways of writing a graphical device readout and control software for USB devices in Python are demonstrated. While the use of proprietary drivers is presented, also self-written, user-space Python USB drivers are introduced as a tool to minimizing software and hardware requirements. This talk gives an overview over writing Python modules in C++, writing USB drivers in Python, analyzing USB packets using Wireshark, writing a user-space driver with PyUSB and writing a GUI software with updating plots in Python.

AKjDPG 3.3 Thu 12:00 L-4.001

NIFTy - Numerical Information Field Theory for Bayesian signal reconstruction — •Torsten Ensslin and the NIFTy Team — MPI für Astrophysik

NIFTy (Numerical Information Field Theory, http://ift.pages.mpcdf.de/nifty/) facilitates the construction of Bayesian field reconstruction algorithms for fields being defined over multidimensional domains. A NIFTy algorithm can be developed for 1D field inference and then be used in 2D or 3D, on the sphere, or on product spaces thereof. NIFTy5 is a complete redesign of the previous framework, and requires only the specification of a probabilistic generative model for all involved fields and the data in order to be able to recover the former from the latter. This is achieved via Metric Gaussian Variational Inference, which also provides posterior samples for all unknown quantities jointly.