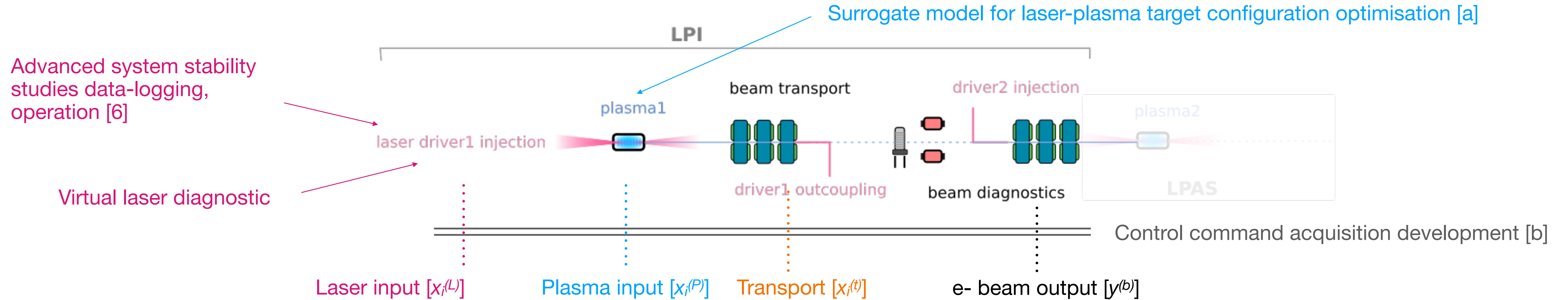


Application of **ML to laser-driven plasma accelerator** is growing, plenty of nice work reported since a few year [1,2,3,4,5...]

In the context of advanced accelerator high quality beam laser plasma injector R&D at IJClab (PALLAS project) : 10 Hz 250MeV LPI test facility to improve **quality and stability of e- beam generated by laser-plasma accelerator**.



[a] Large PIC simulation Data set [7]

- Low fidelity random scan using fast PIC simulations
- Design optimisation of LPI source parameters
- Surrogate model (DNN, XGboost, stacking, GP, BO)
- Open data

[b] Data acquisition development [8]

- Timestamped data in archived in HDB++ timeScaledB
- Distributed control command (Tango Controls) ease deployment
- Development of device server specific for LPA/LPI
- Open data

[1] : A. Döpp et al. arXiv:2212.00026 [2] M. Kirchen et al., & S. J alas 10.1103/PhysRevLett.126.174801 [3] M.Streeter et al. doi:10.1017/hpl.2022.47 [4] R. Shalloo et al. arXiv:2007.14340 [5] F. Irshad et al. arXiv:2303.15825 [6] Lin et al. doi:10.1017/hpl.2023.1 [7] P. Drobniak et al arXiv:2305.09264. [8] S. Feister arXiv:2306.01661