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SP5: Comparison of experimental and theoretical CSR-driven instability thresholds at ANKA

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Thanks to the improved observation techniques, a large amount of experimental results became available recently for the CSR-driven longitudinal single bunch instability thresholds at ANKA. Especially the half island of stability which exists for shorter bunches was investigated in detail. In this regime an unstable bunch will become stable again at certain higher bunch currents. For theoretical predictions the Vlasov-Fokker-Planck solver developed at the HZB was used. With the simple shielded CSR-model the agreement between theoretical and experimental results is surprisingly good in this exotic regime of parameters.

Summary

With the simple shielded CSR-model the agreement between theoretical and experimental results for the CSR-induced micro-bunching instability is surprisingly good.

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