

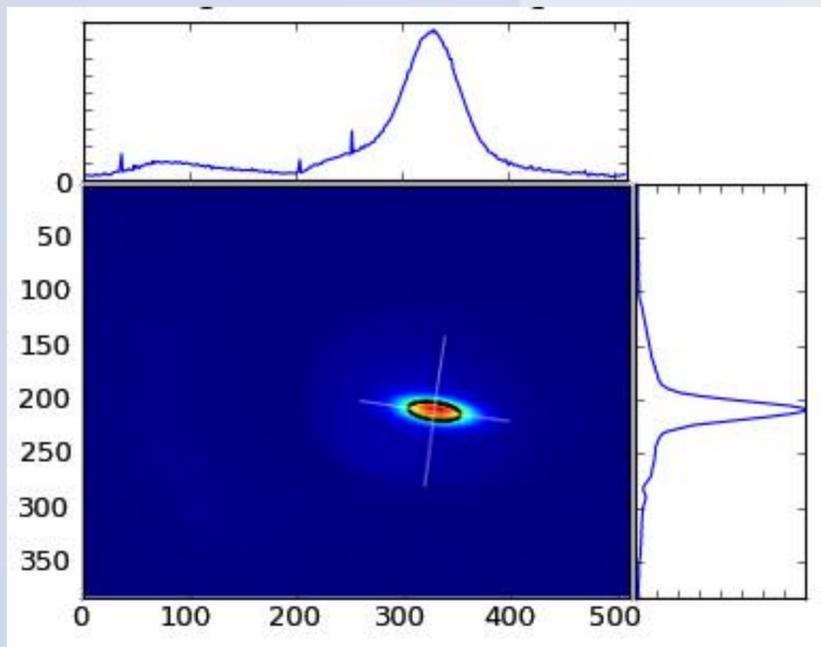
STORAGE RING INJECTOR DIAGNOSTICS USING SYNCHROTRON RADIATION.

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The state of the Diamond injector can be passively monitored using beam profile measurements of synchrotron radiation from bending magnets.

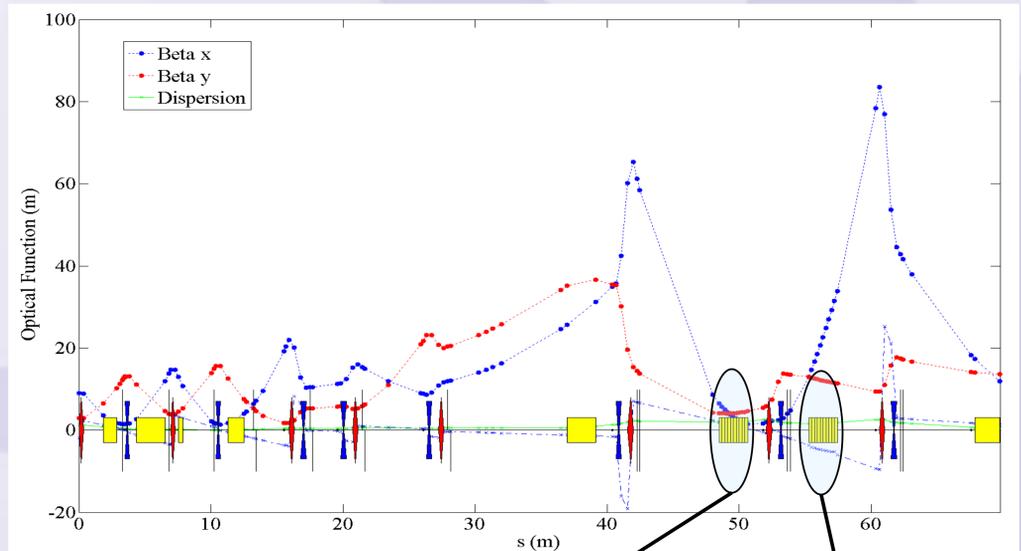
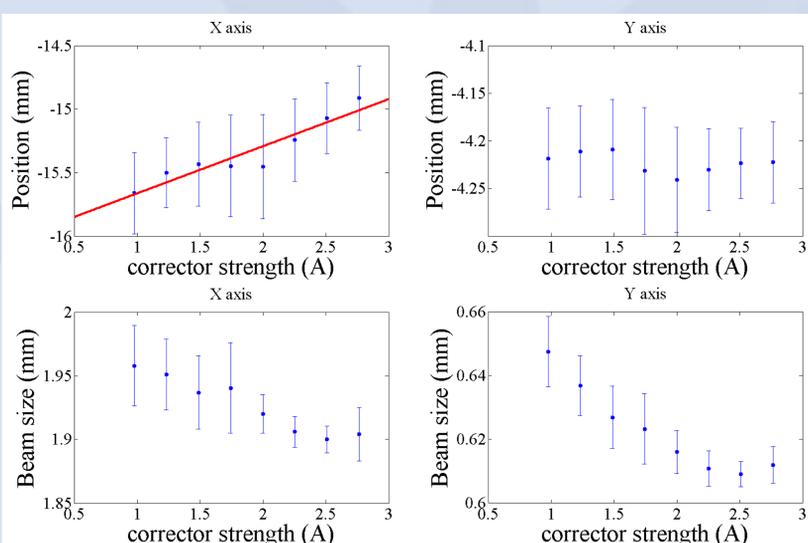
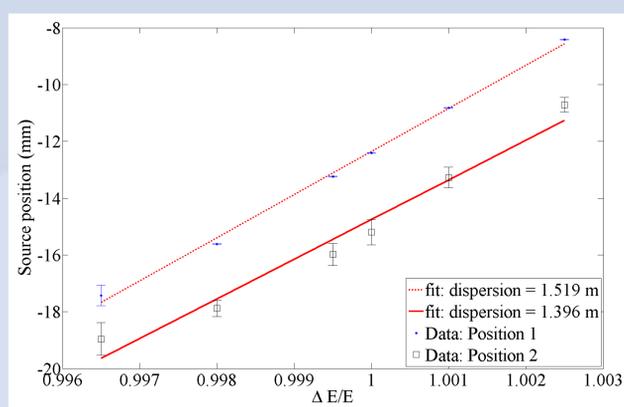
Image analysis

Using a numerical fit we are able to retrieve key parameters like beam position, size and tilt angle from every injection.



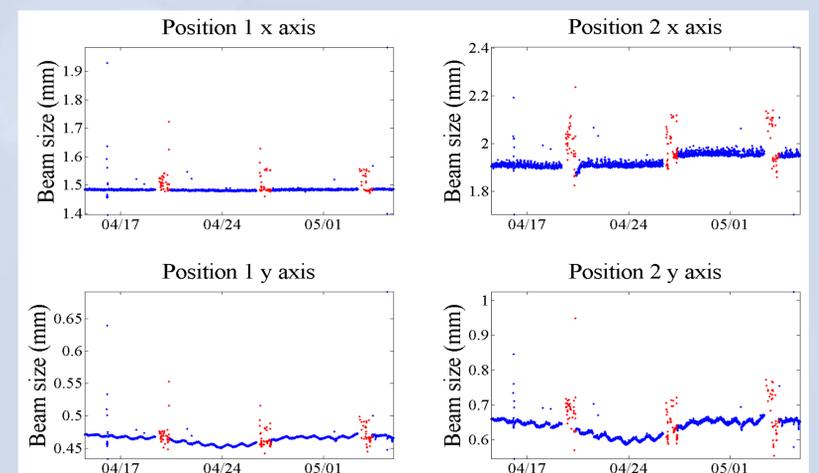
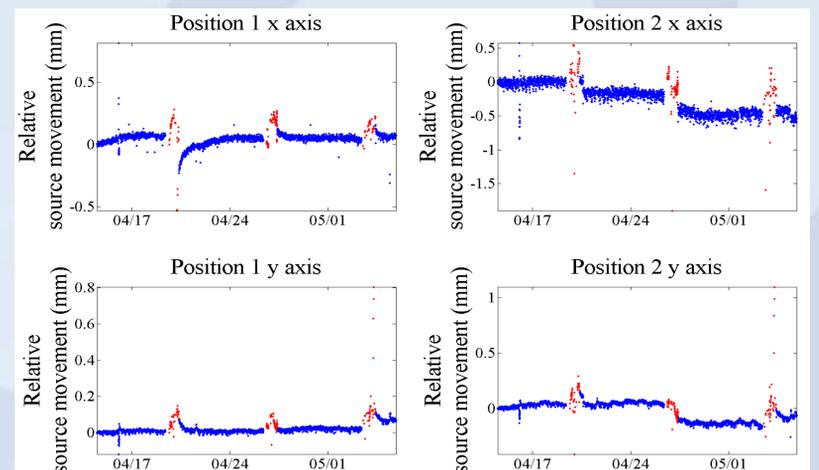
Characterisation

Dedicated experiments have been done to measure the dispersion and verify linear response with source position movement



Historical trends

The image analysis enables us to gather longer term trends to monitor for any changes during top-up operation and also to better understand any variability of the injector.



All our measurements have been compared with a model of the transfer line. These results will help guide further work.

	Position 1		Position 1	
	Data	Model	Data	Model
σ_x (mm)	1.25	1.56	1.76	2.24
σ_y (mm)	0.46	0.81	0.65	1.38
η (m)	1.52	1.99	1.40	1.69
β_x (m)	2.6	3.2	13.1	24.8
β_y (m)	123.2	4.1	230.3	12.1