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Reconstruction of the past history of the center of our Galaxy through X-Ray reflection spectra simulations.

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In the centre of our Galaxy lies a super-massive black hole, identified with the radio source Sagittarius A. *Sagittarius A* is quite dim in terms of total radiated energy, having a luminosity that is a factor of lower than its Eddington luminosity. However, there is compelling evidence that this source was far brighter in the past. This conclusion was derived from the detection of reflected X-ray emission from the giant molecular clouds in the Galactic centre region. However, the interpretation of the reflected emission spectra cannot be done correctly without detailed modelling of the reflection process. We have developed a Monte Carlo simulation code in order to fully model the complex processes involved in the emerging reflection spectra. The simulated spectra can be compared to real data in order to derive model parameters and constrain the past activity of the black hole. In particular we apply our results to XMM-Newton, Chandra and INTEGRAL observations of Sgr B2, in order to constrain the position and density of the cloud and the incident luminosity of the central source.

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