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## Observation and measurements of the production of prompt and non-prompt $J/\psi$ mesons in association with a Z boson in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector.

The associated production of vector boson with heavy quarkonia is a key observable for understanding the quarkonium production mechanisms. In this poster we present the first evidence of the production of the Z boson in association with a prompt and non-prompt  $J/\psi$  meson and measure its production rate in comparison of the inclusive Z production. Relative contributions to the signal from single and double parton scattering are estimated. We compare single parton scattering cross-sections to cutting-edge theoretical calculations in the colour singlet and colour octet formalisms. Finally, we extract a lower limit in the double parton scattering effective cross section.

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