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| 1. Record Nr. | UNINA9910300414003321 |
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| Titolo | Spin Correlations in tt Events from pp Collisions : Measured at s = 7 TeV in the Lepton+Jets Final State with the ATLAS Detector // by Boris Lemmer |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015 |
| ISBN | 3-319-18932-8 |
| Edizione | [1st ed. 2015.] |
| Descrizione fisica | 1 online resource (246 p.) |
| Collana | Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053 |
| Disciplina | 539.7212 |
| Soggetti | Elementary particles (Physics) Quantum field theory String theory Physical measurements Measurement Elementary Particles, Quantum Field Theory Quantum Field Theories, String Theory Measurement Science and Instrumentation |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index at the end of each chapters. |
| Nota di contenuto | Standard Model, Top Quarks and Spin Correlation -- Experimental Setup -- Analysis Objects -- Dataset, Signal and Background Modelling -- Event Selection and Reconstruction -- Analysis Strategy -- Systematic Uncertainties -- Results -- Summary, Conclusion and Outlook. |
| Sommario/riassunto | This thesis introduces readers to the Standard Model, the top quark and its properties, before explaining the concept of spin correlation measurement. The first measurement of top quark spin correlations at the LHC in the lepton+jets decay channel is presented. As the heaviest elementary particle, the top quark plays an essential role in the Standard Model of elementary particle physics. In the case of top quarks being produced in pairs at hadron colliders, the Standard Model |

predicts their spins to be correlated. The degree of correlation depends on both the production mechanism and properties of the top quark. Any deviation from the Standard Model prediction can be an indicator for new physics phenomena. The thesis employs an advanced top quark reconstruction algorithm including dedicated identification of the up- and down-type quarks from the W boson decay.
