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WRAPPED BRANES AS QUBITS; 9. REPURPOSING STRING THEORY; 10. FOUR QUBIT ENTANGLEMENT: A FALSIFIABLE PREDICTION; Acknowledgements; CHAIRMAN: M.J. DUFF Scientific Secretaries: L. Borsten, F. Zaidi; DISCUSSION I; CHAIRMAN: M. J, DUFF Scientific Secretaries: P. Dunin-Barkowski, A. Popolitov; DISCUSSION II; Perturbative and Non-Perturbative Aspects of $N = 8$ Supergravity S. Ferrara; 1 Lecture I On "Quantum" $N = 8$, $d = 4$ Supergravity; 2 Lecture II (Multi-Center) Black Holes and Attractors; Acknowledgments; References

CHAIRMAN: S. FERRARA Scientific Secretaries: N. Ambrosetti, A. Zahabi DISCUSSION I; CHAIRMAN: S. FERRARA Scientific Secretaries: N. Ambrosetti, A. Zahabi; DISCUSSION II; The Gravitational S-Matrix : Erice Lectures S. B. Giddings; 1 The problem(s) of quantum gravity; 2 The gravitational S-matrix; 2.1 Observables in quantum gravity?; 2.2 The S-matrix and the ultraplanckian regime; 3 Review of perturbative gravity; 3.1 Perturbative quantization and the Born amplitude; 3.2 Radiative corrections, nonrenormalizability, and the problem of ultraplanckian energies

3.3 Eikonal regime, and classical scattering 3.4 Match to supergravity amplitudes; 3.5 Momentum fractionation and strong gravity; 4 The gravitational unitarity crisis; 5 Nice slices and the local spacetime perspective; 6 Lessons from loops or strings?; 7 Beyond local quantum field theory; 8 The gravitational S-matrix: exploring general properties; 8.1 Unitarity, analyticity, crossing; 8.2 Partial waves, strong gravity, and a "Black-hole ansatz"; 8.3 Locality vs. causality; 9. Conclusions and directions; References

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