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Gravitational-wave signatures of quantum gravity \fs20 ADRIAN DEL RIO, University of Valencia, IVAN AGULLO, Louisiana State University, VITOR CARDOSO, Instituto Superior Tecnico - Lisboa, MICHELE MAGGIORE, University of Geneva, JORGE PULLIN, Louisiana State University — h $-abstract-$\pard We show that gravitational-wave astronomy has the potential to inform us on quantum aspects of black holes. Based on Bekenstein's quantization, we find that black hole area discretization could impart observable imprints to the gravitational-wave signal from a pair of merging black holes, affecting their absorption properties during inspiral and their late-time relaxation after merger. Black hole rotation, ubiquitous in astrophysics, improves our ability to probe these quantum effects. Our analysis shows that gravitational-wave echoes and suppressed tidal heating are signs of new physics from which the fundamental quantum of black hole area can be measured, and which are within reach of future detectors. Our results also highlight the need to derive predictions from specific quantum gravity proposals\pard-/abstract-\

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