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(54) SYSTEMS AND METHODS FOR CONTROL OF NONISOLATED BIDIRECTIONAL POWER CONVERTERS

(71) Applicant: **The Trustees of Columbia University in the City of New York**, New York, NY (US)

(72) Inventors: **Matthias Preindl**, New York, NY (US); **Liwei Zhou**, New York, NY (US); **William-Michael Eull**, Oakville, Ontario (CA); **Matthew Jahnes**, New York, NY (US)

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(57) **ABSTRACT**

Disclosed are implementations that include a power converter system and method including an N-phase power converter stage having to an alternating current (AC) side and a direct current (DC) side, with N≥1. The system and method further include an N-phase LC filter comprising one or more capacitors, wherein respective one or more neutral points of the one or more capacitors are electrically connected to a DC negative terminal of a DC source. A control system drives power switching elements of the N-phase power converter stage to convert received power and to output converted power. The control system drives the power switching elements using variable frequency soft switching at a frequency of at least 20 kHz. The power converter may have bidirectional operation to operate in a traction mode to drive a motor or a charging mode to charge a DC source.