



- (54) **ENHANCEMENTS OF PHYSICAL CHANNELS IN MULTI-TRP**
- (71) Applicant: **InterDigital Patent Holdings, Inc.**,
Wilmington, DE (US)
- (72) Inventors: **Loic Canonne-Velasquez**, Dorval (CA);
Young Woo Kwak, Woodbury, NY (US); **Afshin Haghighat**, Ile-Bizard (CA); **Moon-il Lee**, Melville, NY (US); **Tuong Duc Hoang**, Montreal (CA); **Paul Marinier**, Brossard (CA); **Virgil Comsa**, Montreal (CA)
- (73) Assignee: **InterDigital Patent Holdings, Inc.**,
Wilmington, DE (US)
- (21) Appl. No.: **18/599,827**
- (22) Filed: **Mar. 8, 2024**

Related U.S. Application Data

- (63) Continuation of application No. 17/917,979, filed on Oct. 10, 2022, filed as application No. PCT/US2021/026241 on Apr. 7, 2021.
- (60) Provisional application No. 63/006,977, filed on Apr. 8, 2020, provisional application No. 63/061,281, filed

on Aug. 5, 2020, provisional application No. 63/091,545, filed on Oct. 14, 2020, provisional application No. 63/136,306, filed on Jan. 12, 2021.

Publication Classification

- (51) **Int. Cl.**
H04L 5/00 (2006.01)
H04L 1/08 (2006.01)
- (52) **U.S. Cl.**
CPC **H04L 5/0035** (2013.01); **H04L 1/08** (2013.01); **H04L 5/005** (2013.01)

(57) **ABSTRACT**

Systems, methods, and instrumentalities are described herein regarding enhancements of physical channels in Multi-TRP. Reliability enhancements are provided for physical downlink control channel (PDCCH), including, for example, enhanced support for a control resource set (CORESET) combining. Reliability enhancements are provided for physical uplink control channel (PUCCH), including, for example, activation/deactivation of repetition combining, resource selection, etc. Reliability enhancements are provided for physical uplink shared channel (PUSCH), including, for example, spatial relation determination and signaling, configured and dynamic grant enhancements, etc.

