

Title (en)  
RELATIVE PHASE MEASUREMENT FOR THE COHERENT COMBINING OF LASER BEAMS

Title (de)  
RELATIVPHASENMESSUNG ZUM KOHÄRENTEN KOMBINIEREN VON LASERSTRAHLEN

Title (fr)  
MESURE DE PHASE RELATIVE POUR LA COMBINAISON COHÉRENTE DE FAISCEAUX LASER

Publication  
**EP 3405761 A1 20181128 (DE)**

Application  
**EP 17702012 A 20170116**

Priority  
• DE 102016100721 A 20160118  
• EP 2017050787 W 20170116

Abstract (en)  
[origin: WO2017125345A1] The invention relates to a phase control system (5) for controlling the relative phase ( $\varphi$ ) of two laser beams (17A, 17B) of a laser system (1) to be coherently combined, in particular permitting the provision of a phase-controlled sum laser beam (19). An optical unit (7) of the phase control system (5) comprises a beam input (33) for receiving a measurement portion (19') of two coherent laser beams (17A, 17B) that are/are to be superimposed in a collinear manner to form a sum laser beam (19), and provides measuring beams (31A, 31B, 31C) or measuring beam regions (131A, 131B, 131C), which are used with associated photodetectors (41A, 41B, 41C) for the output of photodetector signals. In order to determine the relative phase from the photodetector signals, the phase control system (5) has an evaluation unit (9) and a delay device (11) for introducing at least one of the two laser beams (17A, 17B) into the beam path. The optical unit is designed in such a way that the measuring beams (31A, 31B, 31C) or measuring beam regions (131A, 131B, 131C) are assigned different phase offsets.

IPC 8 full level  
**G01J 9/00** (2006.01); **H01S 3/13** (2006.01); **H01S 3/23** (2006.01)

CPC (source: EP US)  
**G01J 9/00** (2013.01 - US); **G01J 9/02** (2013.01 - EP US); **H01S 3/10053** (2013.01 - US); **H01S 3/10061** (2013.01 - EP US); **H01S 3/1305** (2013.01 - US); **H01S 3/1307** (2013.01 - EP US); **H01S 3/1308** (2013.01 - US); **H01S 3/235** (2013.01 - EP US); **H01S 3/2383** (2013.01 - EP US)

Citation (search report)  
See references of WO 2017125345A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**DE 102016100721 B3 20170323**; CN 108780010 A 20181109; CN 108780010 B 20210312; EP 3405761 A1 20181128; US 11114814 B2 20210907; US 2019052045 A1 20190214; WO 2017125345 A1 20170727

DOCDB simple family (application)  
**DE 102016100721 A 20160118**; CN 201780018243 A 20170116; EP 17702012 A 20170116; EP 2017050787 W 20170116; US 201816039263 A 20180718