

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国际局

(43) 国际公布日
2023 年 1 月 5 日 (05.01.2023)



(10) 国际公布号
WO 2023/273129 A1

(51) 国际专利分类号:
H04B 10/50 (2013.01)

(21) 国际申请号: PCT/CN2021/133396

(22) 国际申请日: 2021 年 11 月 26 日 (26.11.2021)

(25) 申请语言: 中文

(26) 公布语言: 中文

(30) 优先权:
202110723956.4 2021年6月29日 (29.06.2021) CN

(71) 申请人: 苏州旭创科技有限公司 (INNOLIGHT TECHNOLOGY (SUZHOU) LTD.) [CN/CN]; 中国江苏省苏州市工业园区霞盛路8号三楼 / 朱书明, Jiangsu 215000 (CN)。

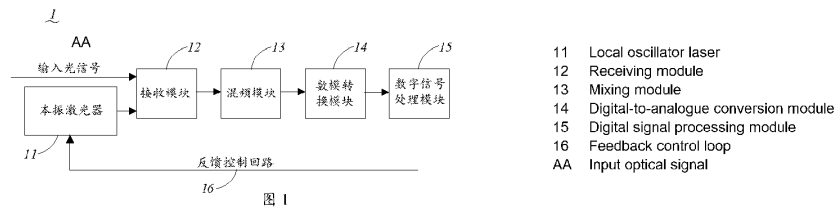
(72) 发明人: 郑学哲 (ZHENG, Xuezhe); 中国江苏省苏州市工业园区霞盛路8号研发/2楼, Jiangsu 215000 (CN)。 夏哲 (XIA, Zhe); 中国江苏省苏州市工业园区霞盛路8号研发/2楼, Jiangsu 215000 (CN)。 季焱 (JI, Yan); 中国江苏省苏州市工业园区霞盛路8号研发/2楼, Jiangsu 215000 (CN)。

(81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW。

(84) 指定国 (除另有指明, 要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG)。

(54) Title: OPTICAL MODULE, WAVELENGTH ADAPTIVE COHERENT OPTICAL COMMUNICATION METHOD, AND COMPUTER STORAGE MEDIUM

(54) 发明名称: 光模块、波长自适应相干光通信方法及计算机存储介质



(57) Abstract: Provided in the present invention are an optical module, a wavelength adaptive coherent optical communication method, and a computer storage medium, the optical module comprising: a local oscillator laser, used for outputting local oscillator light; a receiving module, used for receiving an input optical signal and a local oscillator optical signal; a mixing module, used for mixing the input optical signal and the local oscillator optical signal to obtain a beat frequency signal; and a digital signal processing module, at least configured to be used for calculating the frequency of the beat frequency signal and, by means of a feedback control loop, adjusting the frequency of the local oscillator light outputted by the local oscillator laser according to the frequency of the beat frequency signal. By means of calculating in real time the frequency of the beat frequency signal obtained after mixing the local oscillator optical signal and the input optical signal, the frequency difference between the local oscillator optical signal and the input optical signal is obtained and the frequency of the local oscillator optical signal is adjusted in real time according to the frequency difference, such that the frequency difference between the frequency of the local oscillator light and the input optical signal is kept within a relatively small range, realising wavelength adaptation and reducing the requirements for the precision and stability of the input optical frequency.

[见续页]

根据细则4.17的声明：

- 关于发明人身份(细则4.17(i))
- 关于申请人有权申请并被授予专利(细则4.17(ii))
- 发明人资格(细则4.17(iv))

本国际公布：

- 包括国际检索报告(条约第21条(3))。
-

(57) 摘要： 本发明提供一种光模块、波长自适应相干光通信方法及计算机存储介质，光模块包括：本振激光器，其用于输出本振光；接收模块，其用于接收输入光信号和本振光信号；混频模块，其用于将输入光信号和本振光信号进行混频得到拍频信号；数字信号处理模块，其至少被配置用于计算拍频信号频率，并根据拍频信号频率通过反馈控制回路调整本振激光器所输出的本振光的频率。通过实时计算本振光信号和输入光信号混频后得到的拍频信号频率，来得到本振光信号与输入光信号之间的频差，并根据频差实时调整本振光信号频率，从而使本振光频率与输入光信号频差保持在较小范围内，实现波长自适应，降低了对输入光频率精度和稳定性的要求。