Chen-Zhu Xie 谢尘竹

Portfolio:
Scholar:
Preference:
Contact:
Personality: aries INTP ab

Education

Nanjing University — **College** of Engineering and Applied Sciences — Nanjing, Jiangsu

Doctor of Philosophy	*Optical Engineering*	*Q.E. – Top 15%*	Nonlinear Fourier Optics	2025 '27

Dissertation: "Analytic 3D vector linear non-uniform & nonlinear Fourier crystal optics in arbitrary $\bar{\bar{\varepsilon}}, \bar{\bar{\bar{\chi}}}$ dielectrics"

Master 's Studies	*Quantum Electronics*	*Courses Score – 93.5*	THz OAM Source	2022 '24

Northeastern University — **School** of Physics, **College** of Science — Shenyang, Liaoning

Bachelor of Science	*Applied Physics*	*GPA Rank – 1/400*	DDTank Aimbots	2020 '22

Thesis: "Research & design of nonlinear holography based on lithium niobate 3D nonlinear photonic crystal"

Freshman in College	*Science*	*Sichuan Prov. – Top 2%*	7 Notes → 3 Books	2016 '18

Research Projects

3D Vector Nonlinear Fourier Crystal Optics	Analytic solution $\boldsymbol{E}(\boldsymbol{r})$ to $\left[(\boldsymbol{\nabla}\times)^2 - k_0^2\,\bar{\bar{\varepsilon}}\cdot\right]\boldsymbol{E}(\boldsymbol{r}) = k_0^2\,\bar{\bar{\bar{\chi}}}\vdots\mathcal{F}_\omega^{-1}\left[\widetilde{\boldsymbol{E}}_\mathrm{p}\widetilde{\boldsymbol{E}}_\mathrm{p}\right]$	2017.03 – 2018.09	Python — SiYuan — Mathematica
Complex Vector Linear Fourier Crystal Optics	Analytic solution $\boldsymbol{E}(\boldsymbol{r})$ to $\left[(\boldsymbol{\nabla}\times)^2 - k_0^2\,\bar{\bar{\varepsilon}}\cdot\right]\boldsymbol{E}(\boldsymbol{r}) = \boldsymbol{0}$	2017.03 – 2018.09	Python — SiYuan — Mathematica
Real Scalar Nonlinear Fourier Crystal Optics	Analytic solution $\boldsymbol{E}(\boldsymbol{r})$ to $\left(\boldsymbol{\nabla}^2 - k_3^2\right)\boldsymbol{E}_3(\boldsymbol{r}) = \boldsymbol{0}$	2017.03 – 2018.09	Python — SiYuan — Mathematica

Scientific Activities

- **Head Teaching Assistant** at University Name — Spring 2019
  Course Name (COURSE CODE)
- **Teaching Assistant** at University Name — Spring 2017
  Course Name (COURSE CODE)

Publications

[1] **N. Surname** and S. Person, "Placeholder Paper Title", in *2020 Placeholder Conference Title*, Apr. 2020, pp. 1234–1235.

[2] S. Person, S. Person, **N. Surname**, and S. Person, "Placeholder Paper Title", in *2018 Placeholder Conference Title*, Apr. 2018, pp. 1234–1235.

Academic Focus

	Next generation high N.A. 3D vector non-uniform analytic linear & nonlinear Fourier crystal optics	2024.06
!Paraxial $\boldsymbol{k}_0^\omega$	**High N.A.** 3D vector non-uniform analytic linear & nonlinear Fourier crystal optics	2024.03
Emphasizing $\boldsymbol{G}_{\mathrm{xyz}}^\omega$	**3D** vector non-uniform analytic linear & nonlinear Fourier crystal optics	2023.12
Involving $\bar{\bar{\chi}}_\omega^{(2)}$ anisotropy	**Vector** non-uniform analytic linear & nonlinear Fourier crystal optics	2023.06
!Unitary $\boldsymbol{G}_\omega^\pm \Leftarrow$!Hermitian $\bar{\bar{\varepsilon}}_{\mathrm{r}}^\omega \Rightarrow$	**Non-uniform** analytic linear & nonlinear Fourier crystal optics	2023.03
Solution $\boldsymbol{E}_\omega^\pm$ to $\left(\nabla^2 + k_{\omega\pm}^2\right)\boldsymbol{E}_\omega^\pm \propto \boldsymbol{P}_{\omega\pm}^{(2)}$	**Analytic** linear & nonlinear Fourier crystal optics	2022.09
Solution $\mathcal{F}[E_3] = \mathcal{F}\left[f\left(\mathcal{F}^{-1}[\cdot]\right)\right]$ to the Eq. below	**Nonlinear** angular spectrum theory for SFG	2022.06
Solution $\mathcal{F}[E_3] = \iiint$ to $\left(\nabla^2 + k_3^2\right)E_3(\boldsymbol{r}) \propto P_3^{(2)}(\boldsymbol{r})$	**Nonlinear** convolution solution to SFG	2022.03
Nonlinear THz $LiNbO_3$-based metasurface	**Quit THz project formally** — COMSOL	2022.01
BWOPO + THz optical parametric amplification	Mathematica — BookxNote Pro	2021.12
THz backward optical parametric oscillator (BWOPO)	Mathematica — VBA Excel	2021.11
Multi-cycle THz orbital angular momentum (OAM) source	RoamEdit — Blender	2021.11
Narrow-band THz OAM source via Optical Rectification (OR)	Python — Blender	2021.10
Electricity $\xrightarrow{\text{produce}}$ Acoustics $\xrightarrow{\text{modulate}}$ Optics	RoamEdit — VBA Excel	2021.07
Visible Photons $\xrightarrow{\text{SPDC}}$ THz Spectroscopy	BookxNote Pro — GeoGebra — VBA Excel	2021.06
Cavity Phase Matching = Sheet OPO	Paint 3D — RoamEdit — GeoGebra — VBA Excel	2021.05
THz Holography via Optical Rectification	Matlab — GeoGebra — VBA Excel	2021.01
Femtosecond laser $\xrightarrow{\text{Optical Rectification}}$ Terahertz (THz)	GeoGebra — VBA Excel	2020.12
Multicycle THz pulse generation by OR in $LiNbO_3$ ... crystals	VBA PowerPoinT	2020.10

Skills

- **Skill Group:** List of technologies
- **Skill Group:** List of technologies
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- **Skill Group:** List of technologies

Languages

- **Language:** language proficiency level
  - **EXAM:** details
- **Language:** language proficiency level
- **Language:** language proficiency level

Honors & Awards

Academia	Doctor's Qualification Exam (Oral)	Excellent	*Top 15%*	Nanjing U.	2024.01
	Bachelar Dissertation & Defense	Excellent	*1/90*	Northeastern U.	2020.06
Competition	Three Provinces Achievement Expo	Exhibition	*Leader*	Three Prov.	2019.10
	"Challenge Cup" Tech Competition	Grand prize	*Leader*	Liaoning Prov.	2019.06
Scholarships & Fellowships	Academic Fellowship	1st class	*¥40,000*	Nanjing U.	2020-24
	"Jinchuan" Scholarship	1st place	*¥5,000*	Northeastern U.	2019.04
	Academic Scholarship	1st place	*¥2,000*	Northeastern U.	2018.06
	Entrance Scholarship	3rd place	*¥5,000*	Leshan No.1 H.S.	2013.09
Honors & Titles	Graduation with Honor	Outstanding		Northeastern U.	2020.07
	League Member	Excellent		Northeastern U.	2019.11
	Undergraduate Student	Excellent		Northeastern U.	2018.12
Memberships	Chinese Society for Optical Engineering	Member		Nanjing U.	2021-25
	"Qian Sanqiang" Talent Class	Head		I.H.E.P.	2017-20

Extracurricular Activities

- Member at Some Club 2017–Current
  Detailed explanation of what you do at this club
- Member at Some Club 2016–2017
  Detailed explanation of what you do at this club
- Volunteer at Some Event Fall 2019
  Detailed explanation of what you do in this event
- Volunteer at Some Event Winter 2015
  Detailed explanation of what you do in this event