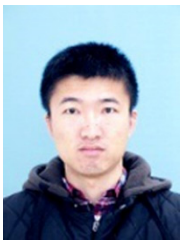
Curriculum Vitae Zhi Qin (秦智)



Optics and Thermal Radiation Research Center, Shandong University
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EDUCATION

Harbin Institute of Technology (HIT), Harbin, China Sept. 2016 – Oct. 2019
Ph.D. in Engineering Thermophysics
Major: Molecular Spectroscopy
Thesis: *Spectral transition properties of diatomic molecules in atmospheres and the interstellar space*

Harbin Institute of Technology (HIT), Harbin, China Sept.2014 – Jun. 2016
M.S. in Power Engineering
Major: Gas Dynamics
Thesis: *Modelling High-temperature Flow Field based on Navier-Stokes equations*

Harbin Institute of Technology at Weihai, Weihai, China Sept. 2010 – Jul. 2014
B.S. in Thermal Energy and Power Engineering
Major: Thermodynamics
Thesis: *Thermodynamic Analysis of Flow Resistance in a Typical T-branch Pine*

RESEARCH EXPERIENCE

Postdoctoral Research Assistant, Shandong University May. 2020 – Present
Optics and Thermal Radiation Research Center, Advisor: Prof. L. H. Liu
* performing a project about generating accurate line lists of P-containing diatomic molecules.

Graduate Research Assistant, HIT
School of Energy Science and Engineering, Advisor: Profs. J. M. Zhao and L. H. Liu Sept. 2014 – Apr. 2020

Gas Dynamics
* Modeled flow field based on Navier-Stokes equations with gas molecular vibrational excitations and chemical reactions.

Gas Radiation
* Carried an impressive review of available data for producing radiative transition probabilities for C, N, O containing diatomic molecules based on reconstructed Rydberg–Klein–Rees (RKR) potentials and accurate ab initio electronic transition moment functions (ETMFs).
*More accurate higher-lying vibrational and rotational levels are obtained using RKR potentials and DPF extrapolation: Application to the calculation of the partition functions, specific heats and spectral radiative properties for high-temperature plasmas.

Diatomic Molecular Spectroscopy
*Ab initio study of potential energy curves and transition properties for low-lying electronic states of N_2, PN, CP, PN^+ and SiO^+ including the core-valence correction, scalar relativistic correction and basis set extrapolation.

Undergraduate Research Assistant, HIT at Weihai
School of Automobile Engineering
* Large eddy simulation of flow field in a T-branch pine and optimization of the T-branch pine to reduce

the flow resistance.

JOURNAL PUBLICATIONS

(*: Corresponding author)

1. Bai Tianrui, **Qin Zhi***, Liu Linhua*. Radiative association for the formation of MgO. ***Monthly Notices of the Royal Astronomical Society***, 2021, 500(2): 2496-2502.
2. **Qin Zhi**, Bai Tianrui, Liu Linhua*. Line lists for the $X^2\Sigma^+$-$X^2\Sigma^+$, $A^2\Pi$-$A^2\Pi$ and $A^2\Pi$-$X^2\Sigma^+$ transitions of CP. ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2021, 258: 107352.
3. Bai Tianrui, **Qin Zhi**, Zhao Junming, Liu Linhua*. Spin-forbidden electronic transition properties of MgO. ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2020, 251: 107086.
4. **Qin Zhi**, Bai Tianrui, Zhao Junming, Liu Linhua*. Transition properties between low-lying electronic states of SiO^+. ***Journal of Molecular Spectroscopy***, 2020, 370: 111298.
5. **Qin Zhi**, Zhao Junming, Liu Linhua*. Spectroscopic investigations of transition properties for the electronic states of PN^+ correlating to two lowest dissociation limits. ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2019, 233: 110-118.
6. **Qin Zhi**, Zhao Junming, Liu Linhua*. Theoretical study on low-lying electronic states of CP radical: energy levels, Einstein A coefficients, Franck-Condon factors and radiative lifetimes. ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2019, 230: 36-47.
7. **Qin Zhi**, Zhao Junming, Liu Linhua*. Energy levels, transition dipole moment, transition probabilities and radiative lifetimes for low-lying electronic states of PN. ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2019, 227: 47-56.
8. **Qin Zhi**, Zhao Junming, Liu Linhua*. "Radiative transition probabilities between low-lying electronic states of N_2," ***Molecular Physics***, 2019, 117(18):2418-2433.
9. **Qin Zhi**, Zhao Junming, Liu Linhua*. "High-temperature partition functions, specific heats and spectral radiative properties of diatomic molecules with an improved calculation of energy levels," ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2018, 210: 1-18.
10. **Qin Zhi**, Zhao Junming, Liu Linhua*. "Radiative transition probabilities for the main diatomic electronic systems of N_2, N_2^+, NO, O_2, CO, CO^+, CN, C_2 and H_2 produced in plasma of atmospheric entry," ***Journal of Quantitative Spectroscopy and Radiative Transfer***, 2017, 202: 286-301.

CONFERENCE PRESENTATIONS

1. **Qin Z**, Zhao J M, Liu L H. High-temperature nonequilibrium thermodynamic properties of N_2 with an improved calculation of energy levels. The 16th International Heat Transfer Conference, Beijing, China, August 10-15, 2018

HONORS & AWARDS

* China National Encouragement Scholarship (1‰) Jun. 2013
*China National Encouragement Scholarship (1‰) Mar. 2012
* First-class Scholarship for Outstanding Students (1%) Apr. 2011

SKILLS

Programming & Software: MATLAB, LEVEL, DUO, DPOTFIT, Tecplot, Fluent, Auto CAD, Pro/E