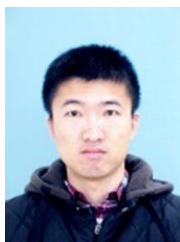


Curriculum Vitae Zhi Qin (秦智)



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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 N₂, 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)

- 13 Bai Tianrui, **Qin Zhi***, Liu Linhua*. Thermodynamic and radiative properties of TiO in local thermal equilibrium and non-equilibrium conditions. *Molecular Physics*, Accepted.
12. **Qin Zhi**, Bai Tianrui, Liu Linhua*. Rovibrationally resolved photodissociation of AlH via excited electronic states. *Astrophysical Journal*, Accepted.
11. Bai Tianrui, **Qin Zhi***, Liu Linhua*. Rovibrationally resolved direct photodissociation of MgO. *Monthly Notices of the Royal Astronomical Society*, 2021, 505(2): 2177-2185.
10. 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.
9. **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.
8. 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.
7. **Qin Zhi**, Bai Tianrui, Zhao Junming, Liu Linhua*. Transition properties between low-lying electronic states of SiO^+ . *Journal of Molecular Spectroscopy*, 2020, 370: 111298.
6. **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.
5. **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.
4. **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.
3. **Qin Zhi**, Zhao Junming, Liu Linhua*. "Radiative transition probabilities between low-lying electronic states of N_2 ," *Molecular Physics*, 2019, 117(18):2418-2433.
2. **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.
1. **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

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|---|-----------|
| * 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