

# Independent Control of Scattering Lengths in Multicomponent Quantum Gases

Peng Zhang, Pascal Naidon, Masahito Ueda

(Submitted on 6 Jan 2009 (v1), last revised 17 Aug 2009 (this version, v3))

We develop a method of simultaneous and independent control of different scattering lengths in ultracold multicomponent atomic gases, such as  $\mathrm{{}^4}\mathrm{K}$  or  $\mathrm{{}^4}\mathrm{K}\text{-}\mathrm{{}^6}\mathrm{Li}$  mixture. Our method can be used to engineer multi-component quantum phases and Efimov trimer states.

Comments: 4pages, 3figures

Subjects: **Atomic Physics (physics.atom-ph)**; Other Condensed Matter (cond-mat.other); Quantum Physics (quant-ph)

Cite as: [arXiv:0901.0694v3](https://arxiv.org/abs/0901.0694v3) [physics.atom-ph]

## Submission history

From: Peng Zhang [[view email](#)]

[v1] Tue, 6 Jan 2009 19:06:03 GMT (222kb)

[v2] Fri, 3 Apr 2009 16:35:18 GMT (203kb)

[v3] Mon, 17 Aug 2009 12:32:38 GMT (76kb)

*Which authors of this paper are endorsers?*

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

**physics.atom-ph**

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [0901](#)

Change to browse by:

[cond-mat](#)

[cond-mat.other](#)

[physics](#)

[quant-ph](#)

## References & Citations

- [CiteBase](#)

## Bookmark([what is this?](#))

[CiteULike logo](#)

[Connotea logo](#)

[BibSonomy logo](#)

[Mendeley logo](#)

[Facebook logo](#)

[del.icio.us logo](#)

[Digg logo](#)

[Reddit logo](#)