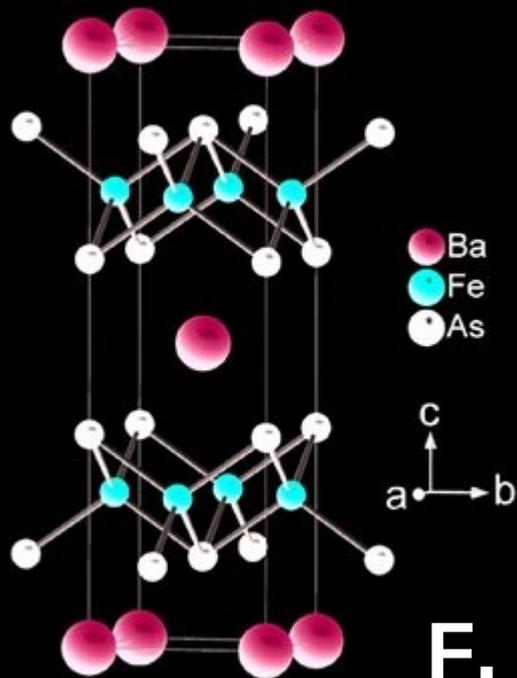


Structure électronique du Fe dans BaFe_2As_2

Étude en température, dopage et pression



Victor Balédent

LPS, Orsay

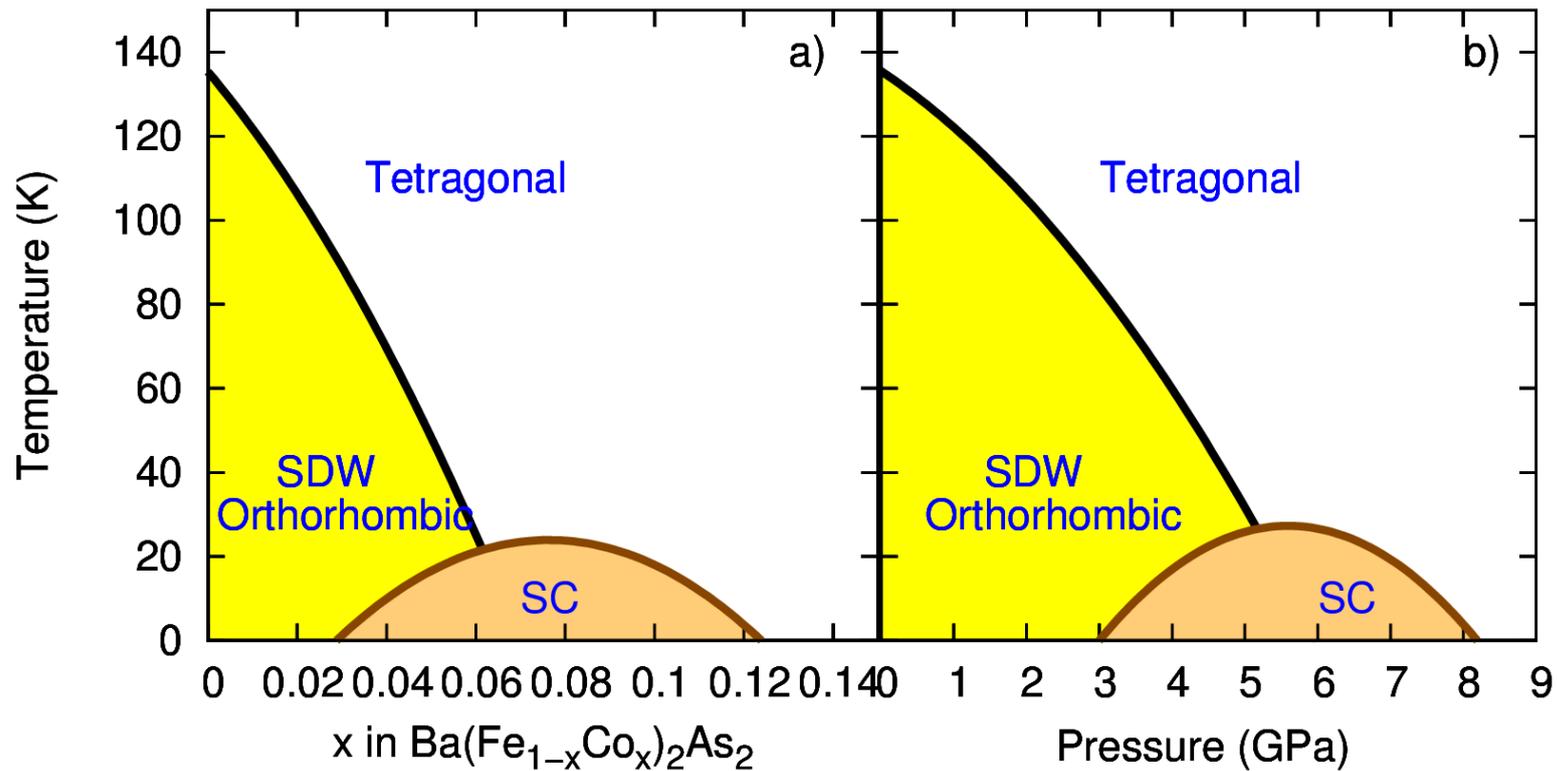
J.-P. Rueff

Synchrotron SOLEIL

F. Rullier-Albenque, D. Colson

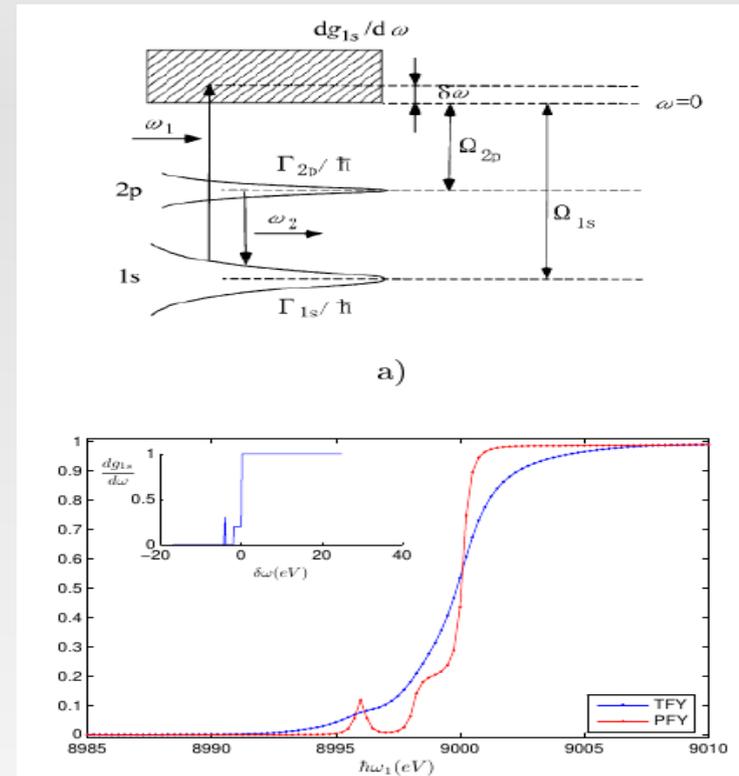
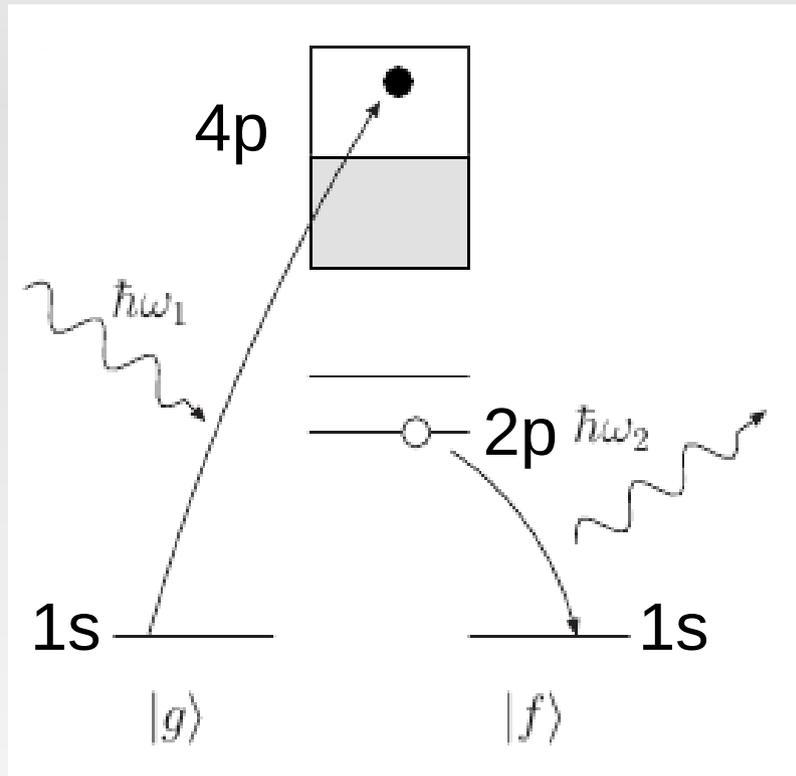
SPEC, CEA-Saclay

Diagramme de phase BaFe_2As_2



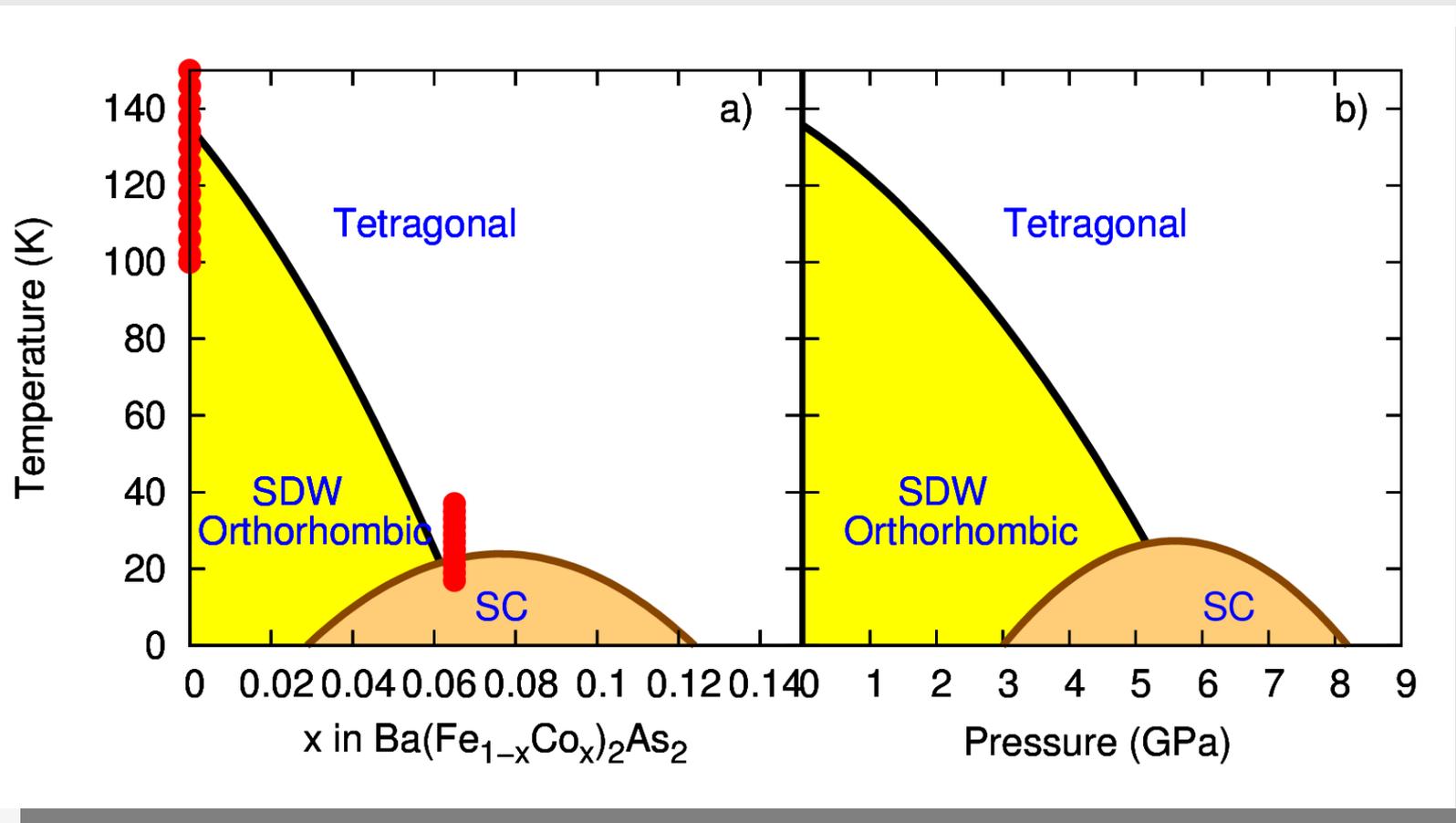
Similarité entre dopage et pression

Structure électronique du Fe



Seuil K du Fe $\sim 7120\text{eV}$

Évolution en température



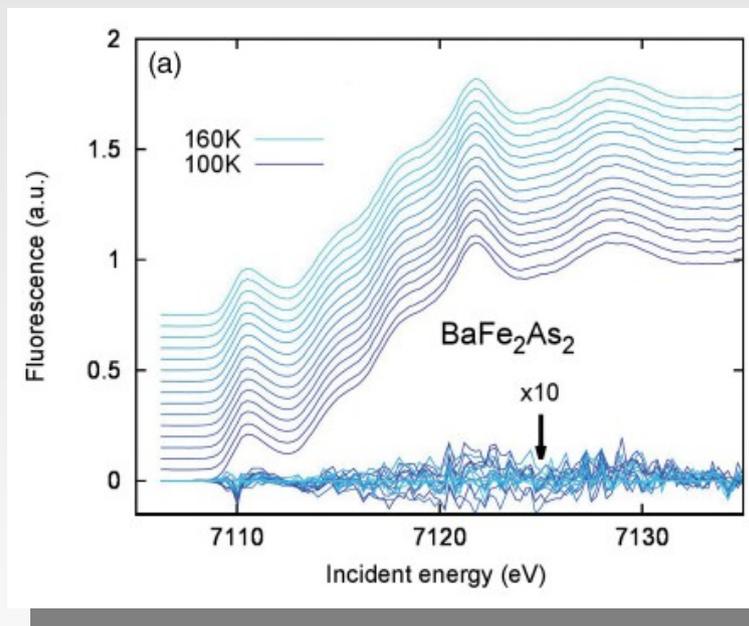
Dopage en électron et Pression hydrostatique

Évolution en température

PHYSICAL REVIEW B **86**, 235123 (2012)

Stability of the Fe electronic structure through temperature-, doping-, and pressure-induced transitions in the BaFe_2As_2 superconductors

V. Balédent,¹ F. Rullier-Albenque,² D. Colson,² G. Monaco,³ and J.-P. Rueff^{1,4,*}



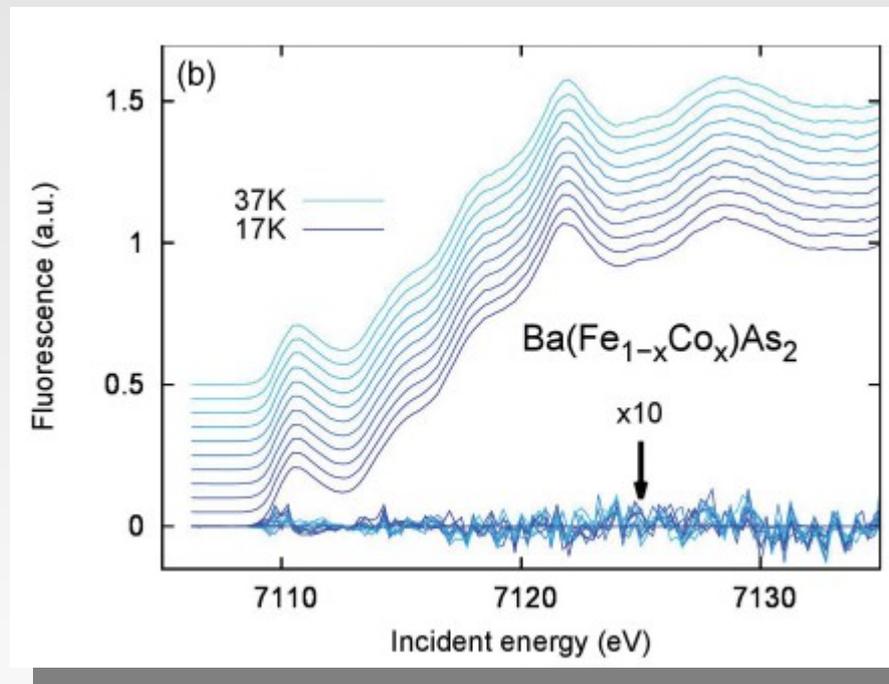
Étonnante stabilité de la structure électronique au travers de T_{SDW}

Évolution en température

PHYSICAL REVIEW B **86**, 235123 (2012)

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Pas de changement de valence en dopage?

Évolution en dopage

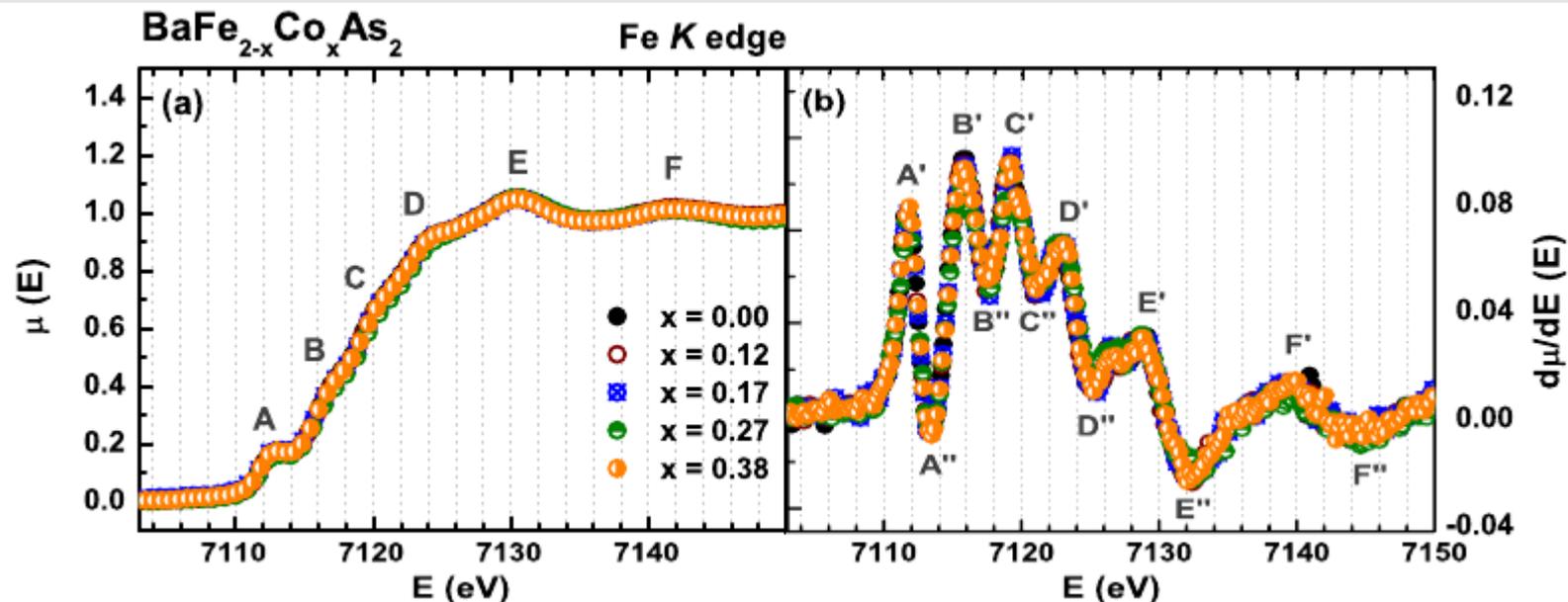
PRL 107, 267402 (2011)

PHYSICAL REVIEW LETTERS

week ending
23 DECEMBER 2011

Co-Substitution Effects on the Fe Valence in the $\text{BaFe}_{2-x}\text{Co}_x\text{As}_2$ Superconducting Compound: A Study of Hard X-Ray Absorption Spectroscopy

E. M. Bittar,^{1,*} C. Adriano,² T. M. Garitezi,² P. F. S. Rosa,² L. Mendonça-Ferreira,³ F. Garcia,¹
G. de M. Azevedo,⁴ P. G. Pagliuso,^{2,5} and E. Granado^{2,1}



Pas de changement de valence du Fe en dopage...

Évolution en dopage

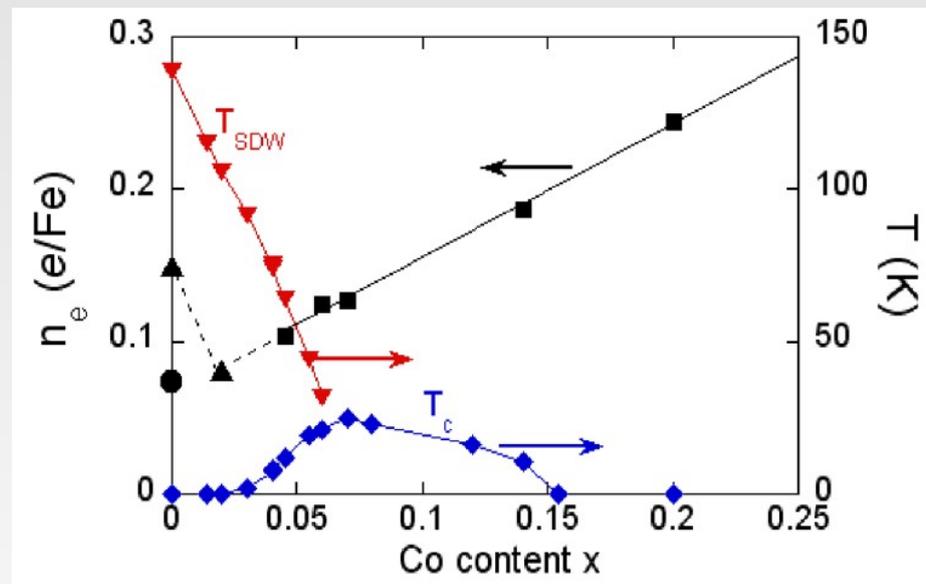
PRL 103, 057001 (2009)

PHYSICAL REVIEW LETTERS

week ending
31 JULY 2009

Hall Effect and Resistivity Study of the Magnetic Transition, Carrier Content, and Fermi-Liquid Behavior in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$

F. Rullier-Albenque,^{1,*} D. Colson,¹ A. Forget,¹ and H. Alloul²



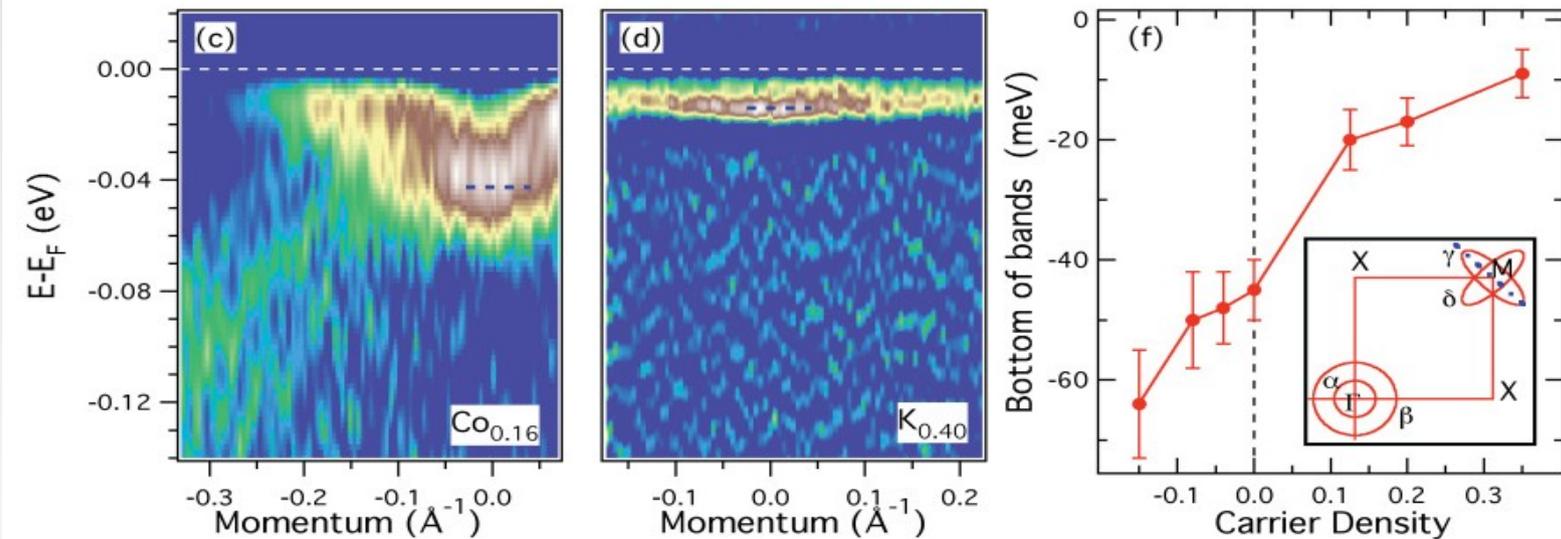
Augmentation du nombre de porteurs...

Évolution en dopage

PHYSICAL REVIEW B 83, 094522 (2011)

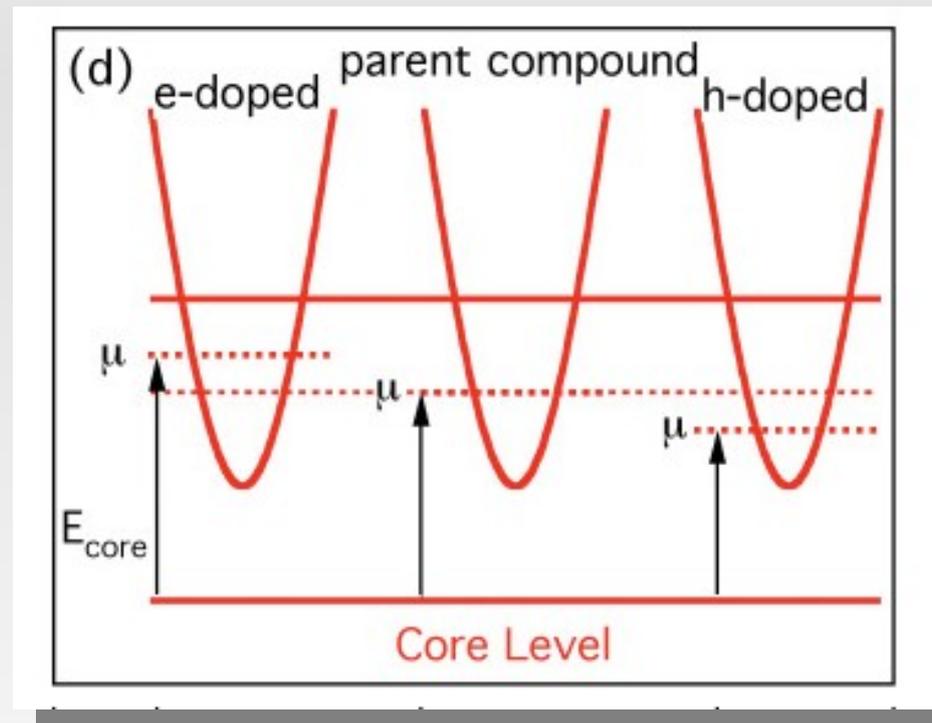
Electron-hole asymmetry in the superconductivity of doped BaFe_2As_2 seen via the rigid chemical-potential shift in photoemission

M. Neupane,¹ P. Richard,^{2,3} Y.-M. Xu,¹ K. Nakayama,⁴ T. Sato,⁴ T. Takahashi,^{2,4} A. V. Federov,⁵ G. Xu,³ X. Dai,³ Z. Fang,³ Z. Wang,¹ G.-F. Chen,¹ N.-L. Wang,³ H.-H. Wen,³ and H. Ding³



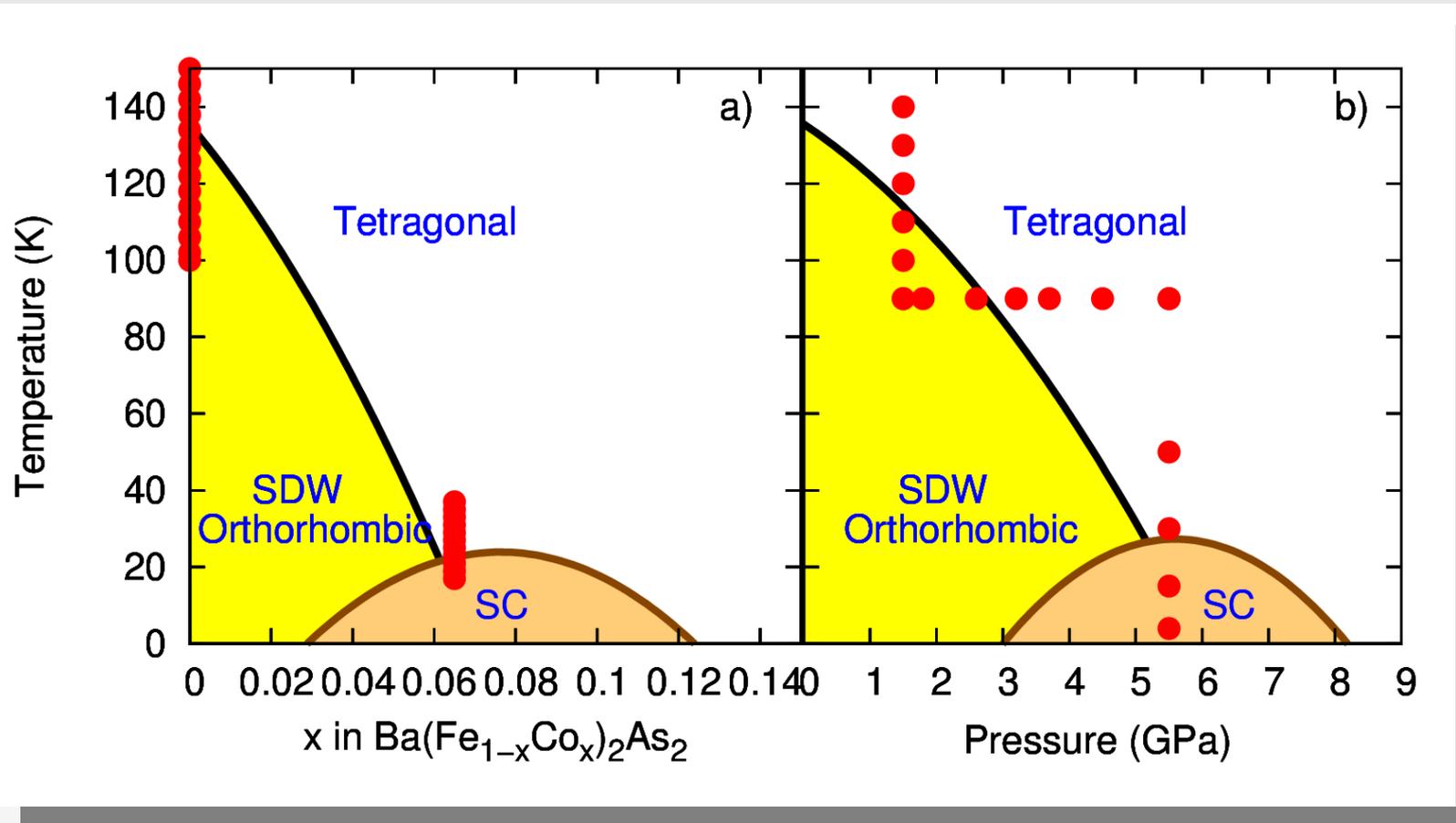
Evolution de la bande de valence...

Évolution en dopage

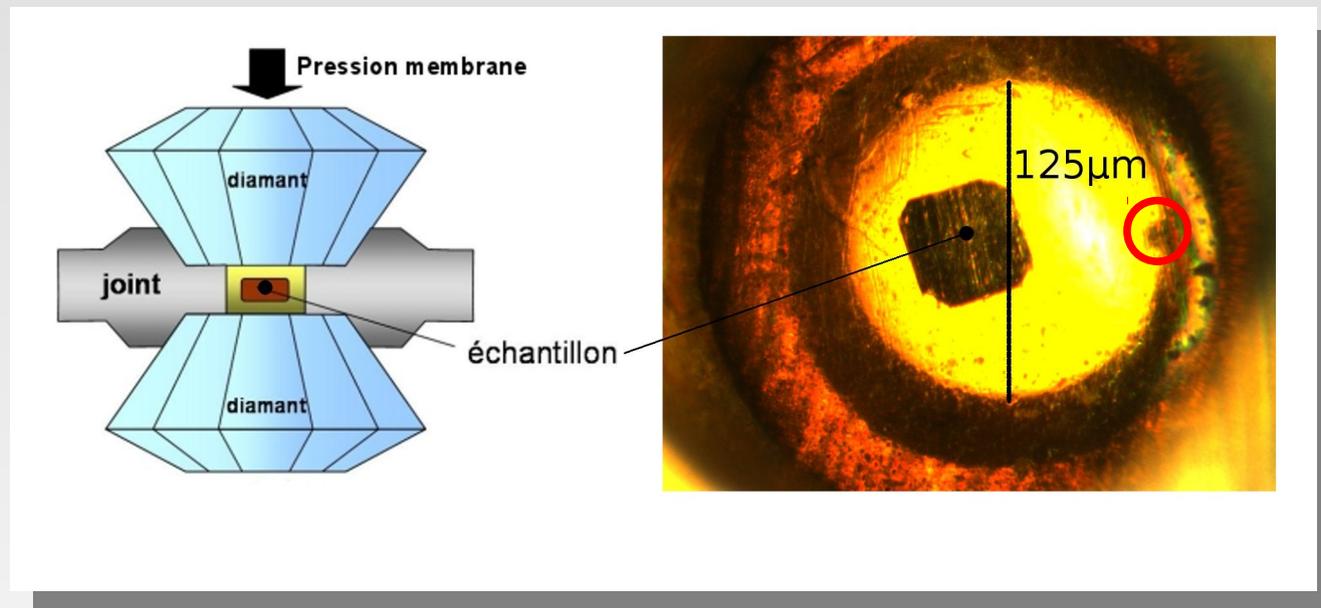


Modèle rigide de bande

Évolution en pression



Évolution en pression



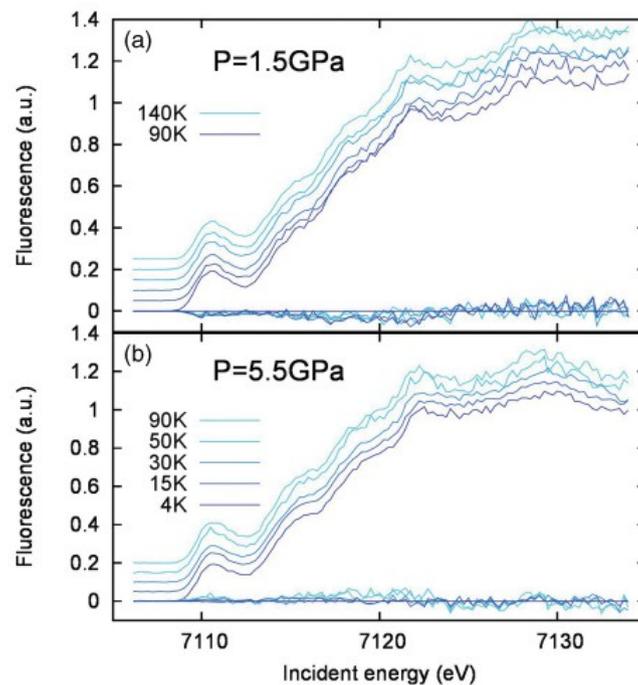
Cellule à enclume diamant

Évolution en pression

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V. Balédent,¹ F. Rullier-Albenque,² D. Colson,² G. Monaco,³ and J.-P. Rueff^{1,4,*}



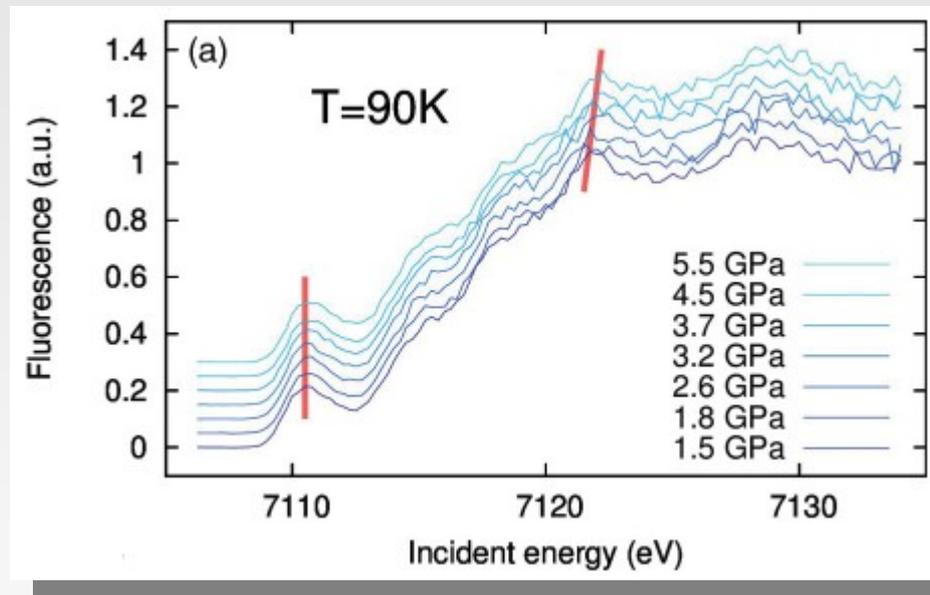
Résultats équivalent en température entre dopage et pression

Évolution en pression

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V. Balédent,¹ F. Rullier-Albenque,² D. Colson,² G. Monaco,³ and J.-P. Rueff^{1,4,*}



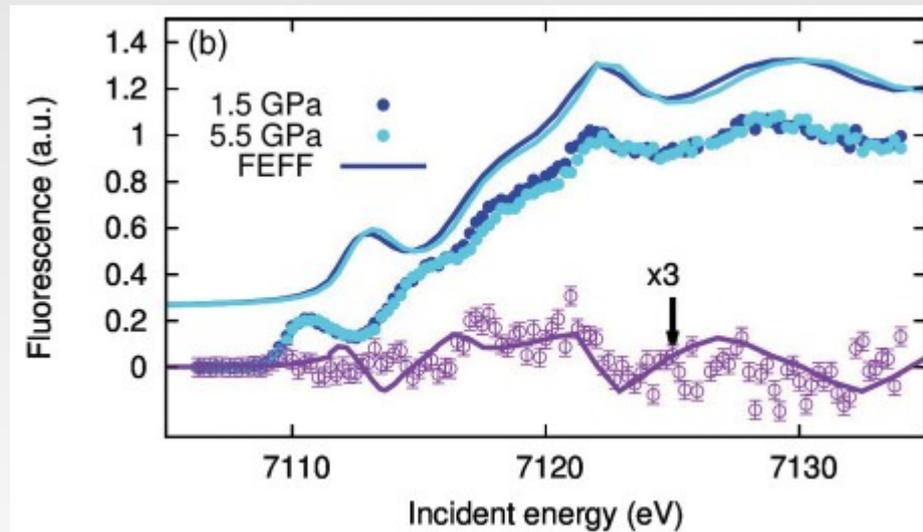
Evolution du spectre d'absorption en fonction de la pression?

Évolution en pression

PHYSICAL REVIEW B **86**, 235123 (2012)

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V. Balédent,¹ F. Rullier-Albenque,² D. Colson,² G. Monaco,³ and J.-P. Rueff^{1,4,*}



Déplacement du spectre compatible avec la compression de la maille

Conclusion

La structure électronique du Fer est stable en température, dopage et pression

Contradiction avec les mesures d'ARPES
(modèle rigide de bande)

Conclusion

La structure électronique du Fer est stable en température, dopage et pression

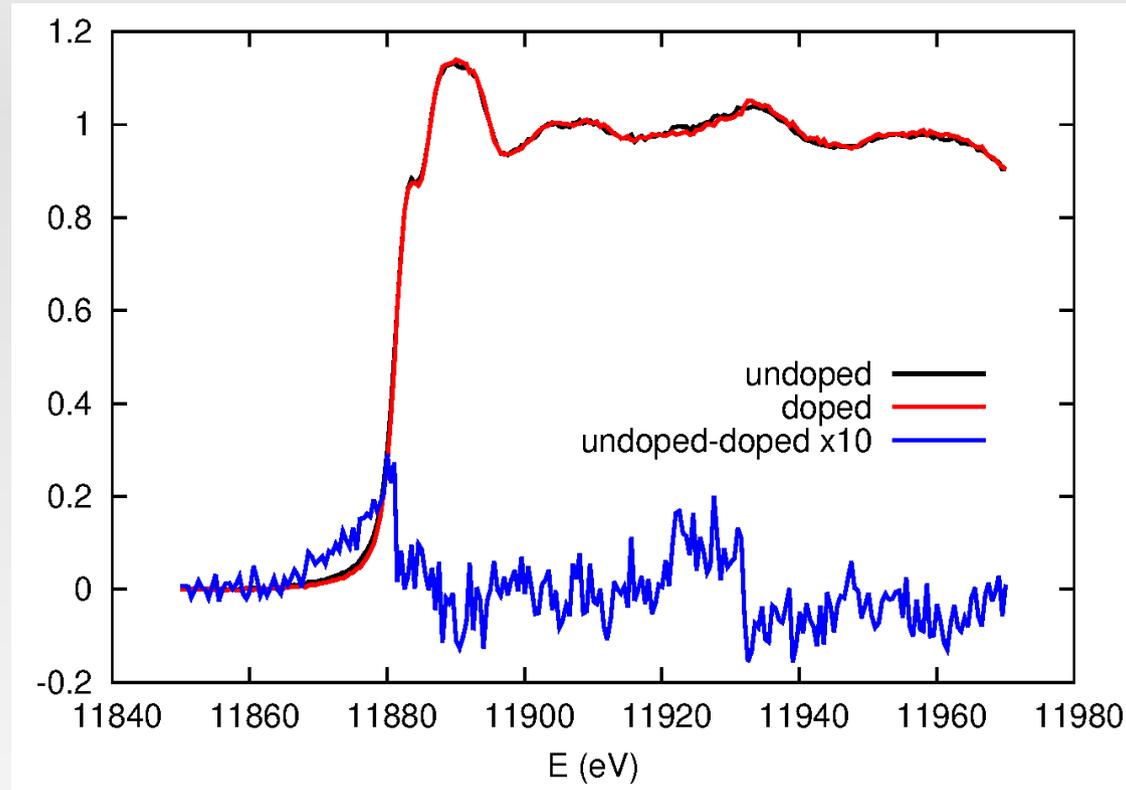
Contradiction avec les mesures d'ARPES
(modèle rigide de bande)

Piste de réconciliation

Rôle important de l'As

Hybridation Fe-As

Conclusion



XAS au seuil As: modification de la structure électronique de As

Remerciements



J.-P. Rueff
Synchrotron SOLEIL

F. Rullier-Albenque, D. Colson
SPEC, CEA-Saclay



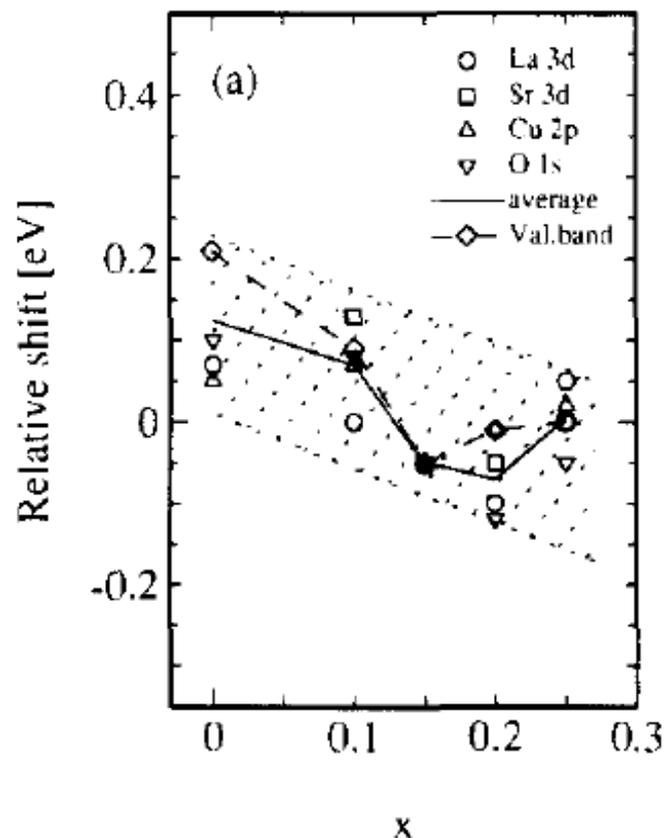
$\text{La}_{1-x}\text{Sr}_x\text{CuO}_4$

Physica C 241 (1995) 257-272

Doping dependence of the chemical potential in cuprate high- T_c superconductors

I. $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$

G. Rietveld ^{a,b,*}, M. Glastra ^a, D. van der Marel ^{a,c}



PHYSICAL REVIEW B

VOLUME 41, NUMBER 1

1 JANUARY 1990

Cu K-edge x-ray-absorption near-edge structure and electronic structure of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$ and $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$

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