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## 学会、研究会等の一般講演

学会、研究会等の一般講演は、50-60 件/年であるが、そのリストは省略する。

## 外部の委員会委員等

(平成9年からの分、それ以前は記録なし)

- 平成 9年 1月－10年 1月 学術審議会専門委員(科学研究費分科会)
- 平成 9年 4月－11年 3月 東大物性研究所共同利用施設専門委員会委員
- 平成10年 4月－10年 9月 大阪大学大学院理学研究科非常勤講師
- 平成10年 4月－12年 3月 東大物性研究所附属物質設計評価施設運営委員会委員
- 平成10年10月－11年 3月 島根大学総合理工学部非常勤講師
- 平成11年 1月－12年 1月 学術審議会専門委員(科学研究費分科会)
- 平成11年 4月－12年 3月 九州大学大学院理学研究科非常勤講師
- 平成11年10月－11年 3月 東大物性研究所共同利用施設専門委員会委員
- 平成12年 8月－14年 7月 日本学術振興会特別研究員等審査会専門委員
- 平成12年 9月－14年 8月 東大物性研究所協議会委員
- 平成12年10月－15年10月 日本学術会議物理学研究連絡委員会委員(第18期)
- 平成13年 4月－15年 3月 東大物性研究所附属中性子散乱研究施設運営委員会委員
- 平成13年 9月－15年 3月 日本学術会議運営審議会付置国際会議等検討委員会  
第23回低温物理学国際会議委員会委員  
第23回低温物理学国際会議組織委員
- 平成15年 4月－17年 3月 東大物性研究所人事選考協議会委員
- 平成15年 4月－18年 東大物性研究所人事選考協議会委員
- 平成15年10月－17年10月 日本学術会議物理学研究連絡委員会委員(第19期)
- 平成15年10月－18年 9月 物性百人委員会委員長
- 平成16年 9月－ 日本学術会議運営審議会付置国際会議等検討委員会  
第23回磁性国際会議委員会委員  
第23回磁性国際会議組織委員
- 平成16年 8月－18年 7月 日本学術振興会特別研究員等審査会専門委員
- 平成17年 1月－17年12月 日本学術振興会科学研究費専門委員会委員
- 平成18年 4月－20年 3月 新超伝導物質探索調査委員会委員
- 第9回超伝導国際会議(M<sup>2</sup>S) プログラムサブ委員会委員
- Advisory Committee Member of (JSTとNational High Mag Lab./Florida)共催の新超伝導体ワークショップ)
- 平成21年 4月－22年 3月 東大物性研究所中性子実験施設運営委員

**受賞等** Paper of Editor's choice in J. Phys. Soc. Jpn. H19年

(その他)

2003年4月—2007年3月 名古屋大学教育研究評議会評議員として、研究科の中期目標・中期計画作成に当たり、教育と研究の改善に努めてきた。

## 研究資金受入れ状況(H4年以降、間接経費を含まず)

文部省科学研究費重点領域研究 (H4~6)

高温超伝導の科学—物理班 (実験) 班長 佐藤正俊 145,000 千円

文部省特別設備費 (H7) 研究代表者 佐藤正俊 171,000 千円

文部省科学研究費重点領域研究 (H7~9)

モット転移近傍の異常金属相—高温超伝導研究班 班長 佐藤正俊

156,700 千円

戦略的基礎研究事業 (H8~13)

低次元異常金属の開発 研究代表者 佐藤正俊 488,900 千円

科学研究費基盤研究 (B) H14-15 年度 研究代表者 佐藤正俊 14,000 千円

科学研究費特定領域研究 (A) H14-15 年度 研究代表者 佐藤正俊 9,900 千円

科学研究費基盤研究 (A) H16-19 年度 研究代表者 佐藤正俊 37,400 千円

科学研究費特定領域研究 (A) 計画研究 H16-20 年度 研究代表者 佐藤正俊

43,500 千円

戦略的創造研究推進事業「新規材料による高温超伝導基盤技術」(H20-23 年度)

鉄プニクタイト系超伝導研究と物質開拓 研究代表者 佐藤正俊 41,000 千円

## 主な研究成果

○ 酸化物(超)伝導体を銅酸化物高温超伝導体発見前から研究し、酸化物超伝導研究の草分け的役割を果たした。その例として、以下のようなものがある。

- (1) タングステンブロンズ $A_xWO_3$ ( $A=K, Rb$ 等)の超伝導転移温度の決定機構を大型単結晶を用いた中性子散乱によって理解した。
- (2) 一次元伝導体であるモリブデンブルーブロンズ $A_{0.3}MoO_3$ の大型単結晶を作成し、電荷密度波(CDW)状態とその運動を中性子散乱実験によって解明した。
- (3) リチウムモリブデンパープルブロンズ $Li_{0.9}Mo_6O_{17}$ の超伝導と電子局在現象の関係を解明した。
- (4) ほかに、 $BaPb_{1-x}Bi_xO_3$ やMagneli相Mo酸化物 $Mo_nO_{3n-1}$ 等の研究がある。

○銅酸化物高温超伝導体研究にも、最も早くから取り組み多数の成果を挙げた。その例を以下に示す。

- (1) タリウム系High- $T_c$ を発見した。
- (2) YBCO系High- $T_c$ の大型結晶を作成、その一連の中性子散乱研究で電子物性解明への太い道筋をつけた。
- (3) 高温までの輸送特性量測定(図1にデータ例)やNMR、中性子散乱等、巨視的、微視的双方の手段で得た結果から、High- $T_c$ 系の異常金属相を端的に表す相図(図2)を提案し、超伝導発現の物理描像を創り上げた。

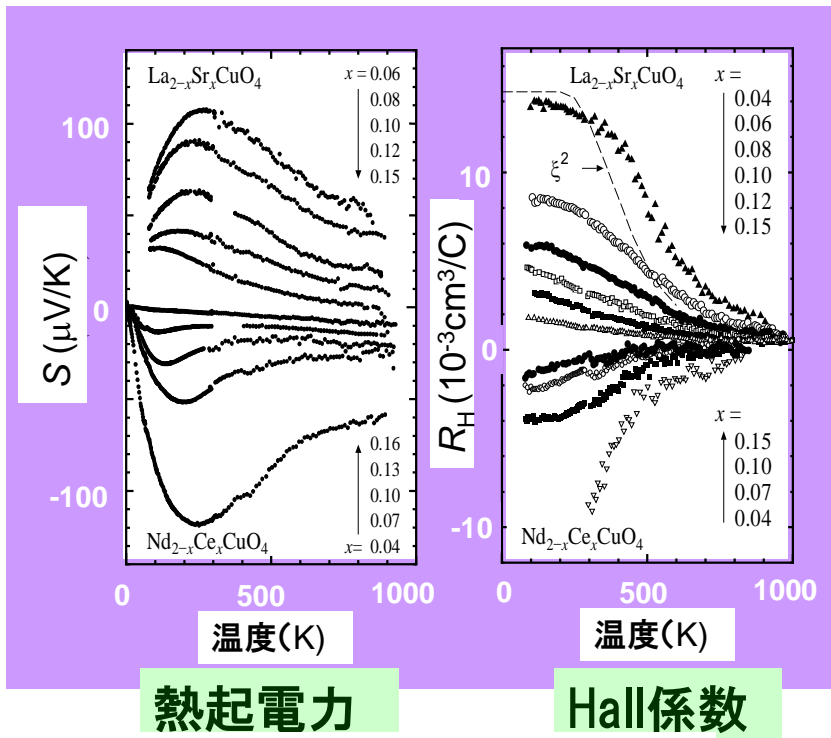


図1

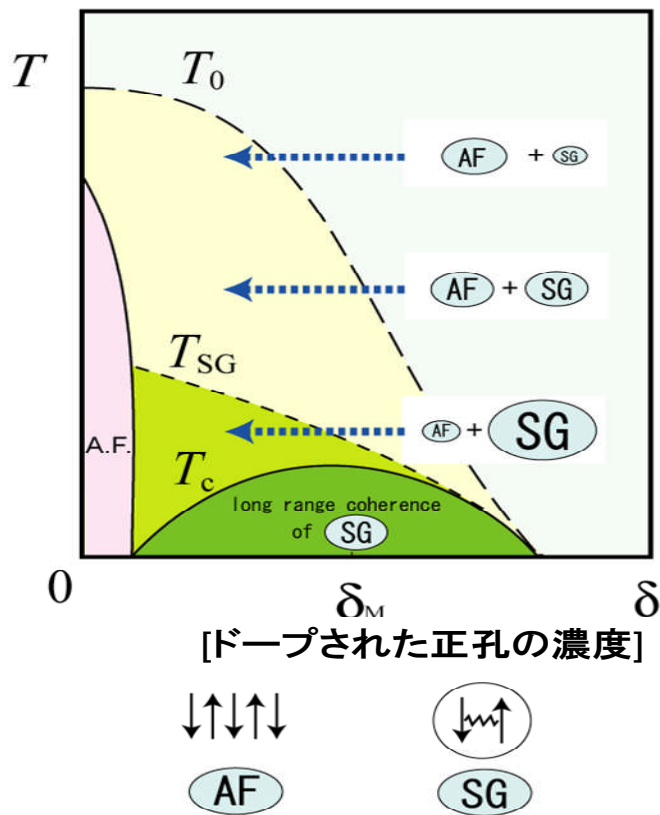


図2 銅酸化物の電子状態の温度変化の概容を表す相図

○ 銅酸化物高温超伝導体研究によって得られた、物質の新しい概念を以後の研究に、図3のような形で発展させた。

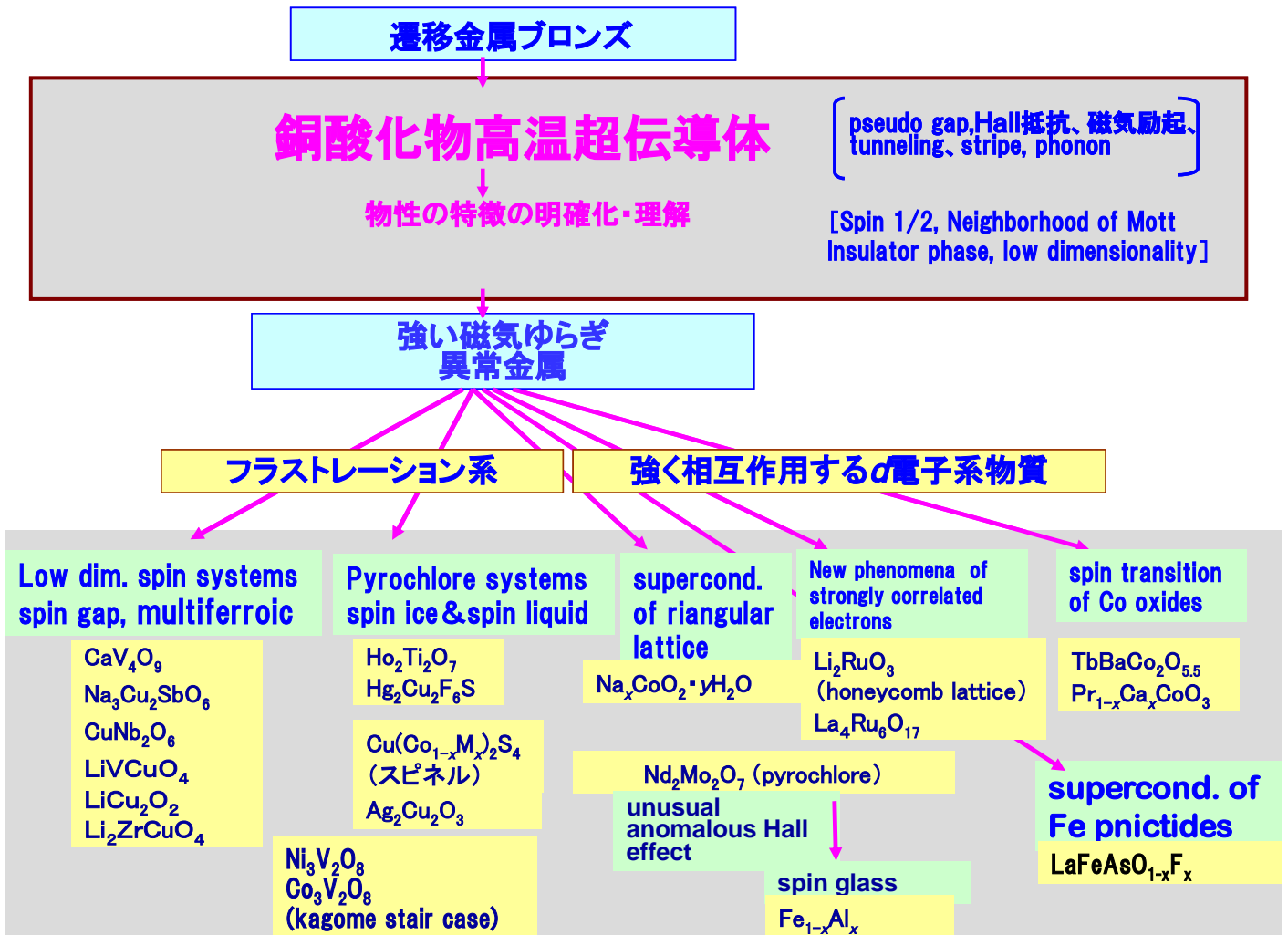


図3

○ 図3にあげた物質系に対する、具体的成果の例は以下のようである。

- (1) Na<sub>x</sub>CoO<sub>2</sub>·yH<sub>2</sub>Oの超伝導を広く研究し、超伝導対称性に関する入り乱れていた主張のなかで正しい結果を与えた。
- (2) plaquette singlet系のCaV<sub>4</sub>O<sub>9</sub>を発見した。



(3)  $\text{Nd}_2\text{Mo}_2\text{O}_7$ の異常ホール効果の特異な振舞を発見したのち、NdとMoの磁気構造を磁場変化まで含めて決定し、特異な振舞と発現機構を論じた。最近、その機構が理論的にも理解されたことにより、このデータは、50年来の課題であった異常ホール効果そのものの発現機構を理解するキーデータとなった。

(4)  $\text{CuO}_2$ リボン鎖系にはじめて、磁気秩序と強誘電性が同時出現にする、マルチフェロイック現象を発見した。

(5) 鉄系に新たに発見された超伝導体の研究プロジェクトの一代表者として対称性研究を牽引し、超伝導発現機構に迫っている。これは、この系が従来にない超伝導発現機構を持つ可能性を強く示唆しているものである。(図4はそれを示すデータ例)

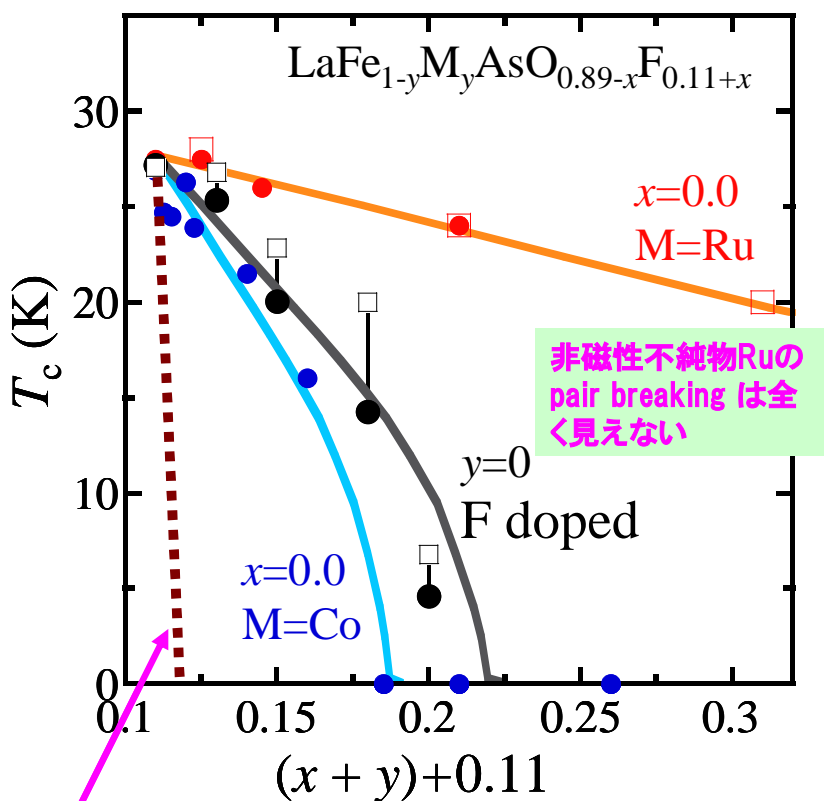


図4

CoやRuが pair breaking 効果を持つ場合の見積もり

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