

€•, f„...† ...‡^%Š< †< €† 1D NMR T2 €< •†•Š€€ Š •†Ž••%•€', ' €†" " €•...< ...•,

—< •†•Š€% T2 • —™ (NMR) <, š•, ••†<, <, •...Ššf, <...••†<€† •, Šš•†> †•†<€%••†œ•< š...š  
œ<...ž...„...œš...<†<f<...ž... Ÿ„ Šš...<†<' €•, • <...ž... ' , f••, <€%•. j ...š„... • „ • ' , > , ž, š•...•... †•š•...  
œ...ž•f š•€•...> €f „ ' < , ž€f†• < €œ „...†‡, <€%œ •†€†<€%•. †ž••%•€', ' €% " €•...< ...•, €šš  
<, „ •, > €•, % ...ž•, <€ž†<€† <, ž•, > „...šf •†€†<€%•.

αf, š€ €< •†•Š€€

1. j ...••ž†<€† Ÿ„ Šš†•€œ†<f, • <€•>, <<€•:

- †ž€šf•€•†fš% Š€ž<, • S(t), ...š€š€•, †œ€" Š•œœ...“ Ÿ„ Šš...<†<f:  
$$S(t) = \sum A_j \exp(-t / T_{\{2i\}}) + \epsilon \cdot \epsilon$$
- †>† A\_j š , œš•€f•> € , , T\_{\{2i\}} š ••†œ†<, š...š†•†ž<...“ •†•, „š, ' €€.

2. j ...šf•...†<€† %> •, €< •†•Š€€:

- `` ...œ€••†fš% œ, f•€' , ...f„ •€„ , (%> ...), š•%•' €•, ©<sup>a</sup> , %• , šš•†> †•†<€† T2 š €' œ†•†<  
$$K_{\{ij\}} = \exp(-t_j / T_{\{2i\}})$$
- «>†š K š•†> šf, ••%†f š...‡...“ ‡€‡•€...f†„ • ' , f••, ©<sup>a</sup> €• Ÿ„ Šš...<†<f> •%• , ' •€ž<€•' <

3. †ž••%•€', ' €% " €•...< ...•, :

- ¬œ†šf... š•%œ...ž... •†€†<€% K A = S (žf... š•€•...> €f „ <†šf, ‡€• <...šf€), •†€ , †fš% šž• ,  
$$\min_A || K A - S ||^2 + \mathbb{R} || L A ||^2$$
- j , • , œ†f• •†ž••%•€', ' €€ ® „...<f•...€••†f ž•, > „...šf •†€†<€%:  
- ~ , •...† ® - •†€†<€† ‡•€' „... „ <†...‡•, ‡...f, <<€œ>, <<€œ (š...> †•- €f €•œ).  
- ° ...• €...† ® - ž•†'œ†•<...† šž• , - €•, <€†, š...f†•%• , ' •†€†<€%.
- L š ...‡€ž<... †> €<€ž<, % œ, f•€' , €•€ œ, f•€' , „...<†ž<€•• , ' <...šf†" , <, „ •, > €•, ©<sup>a</sup> ,

4. †€†<€† •†ž••%•€' ...•, <<...“ ' , > , ž€:

- —šš... ' •©fš% ž€š•†<<€† œ†f...> € (<, š•€œ†•, scipy.optimize.lsqr\_linear) > •% •†€†<€  
<, „ •, > €•, % f, „ - †•š•...€% <†...f•€' , f†• <...šf€ A.

5. ¬€' •, •€' , ' €%:

- —f...ž...•...† •, šš•†> †•†<€† A(T2) šf•...€fš% • •...ž , •€±œ€ž†š„...œ œ, š€f, ‡†, š...„ , ' €•, %  
•, ' <€œ€ ••†œ†<, œ€ •†•, „š, ' €€.

j •†€œ•<sup>a</sup> †šf•, •†ž••%•€', ' €€ " €•...< ...•, :

- j •†> ...f•• , <sup>a</sup> , †f š...> ž...< „ • „ €•œ• • Ÿ„ Šš†•€œ†<f, • <€•>, <<€•.
- <sup>2</sup> ‡†šš†ž€•, †f ž•, > „...šf € ±€' €ž†š„...šœ€š•†<<€" •†' •• f, f.
- <sup>3</sup> f, ‡€•€' €••†f •†€†<€† • š•...•... ‡•š•...•†<<€• €< •†•Š€%•.