Pseudocode for DSGF solver – MATLAB version
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This program computes near-field radiative heat transfer between two objects

Define constants (Planck's constant, Boltzmann constant, vacuum permittivity, vacuum permeability, speed of light in vacuum);

// Discretization of thermal sources

IF pre-defined discretization

Read positions of the subvolume centers from existing discretization file for object 1, scaling it with the characteristic length defined by the user in the input file;

Read positions of the subvolume centers from existing discretization file for object 2, adding the gap spacing between the objects and scaling it with the characteristic length defined by the user in the input file;

Calculate the volume of each subvolume in object 1. The volume of object 1 is divided by the number of subvolumes in object 1. Both volume and number of subvolumes are defined by the user in the input file. Only uniform discretization is allowed;

Calculate the volume of each subvolume in object 2. The volume of object 2 is divided by the number of subvolumes in object 2. Both the volume and number of subvolumes are defined by the user in the input file. Only uniform discretization is allowed;

Assign temperature T1 to all subvolumes in object 1 and temperature T2 to all subvolumes in object 2. The temperatures T1 and T2 are defined by the user in the input file;

ELSE IF user-defined discretization

Read positions of the subvolumes centers from the user-defined discretization file;

Read volumes of the subvolumes in the user-defined delta_V file. Nonuniform discretization is allowed;

Assign temperature T1 to all subvolumes in object 1 and temperature T2 to all subvolumes in object 2. The temperatures T1 and T2 are defined by the user in the input file;

END IF

Read the frequencies (ω) defined by the user in the input file;

Calculate and plot the dielectric function for each frequency (ω) of the material selected by the user in the input file;

// Calculation of system Green's functions

FOR each frequency ω:

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    FOR each subvolume i:
        FOR each subvolume j:
            Calculate G_0 (free-space Green's function);
        END FOR
    END FOR

    FOR each subvolume i:
        FOR each subvolume j:
            Calculate A (interaction matrix);
        END FOR
    END FOR

    FOR each subvolume i:
        FOR each subvolume j:
            Calculate G (system Green's function) by direct inversion G=A\G_0;
        END FOR
    END FOR

    FOR each subvolume i in object 1:
        FOR each subvolume j in object 2:
            Calculate transmission coefficient;
        END FOR
    END FOR

    FOR each subvolume i:
        Calculate spectral power dissipated in each subvolume from transmission
        coefficient;
    END FOR

    // Calculate spectral power dissipated in object 1 and in object 2;

    FOR each subvolume i:
        IF subvolume i is in object 1:
            Add the spectral power dissipated in subvolume i to the spectral power
            dissipated in object 1;
        ELSE IF subvolume i is in object 2:
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                Add the spectral power dissipated in subvolume i to the spectral power
                dissipated in object 2;
            END IF
        END FOR

END FOR

FOR each subvolume i:
        Calculate total power dissipated in each subvolume by integrating the spectral power
        dissipated in each subvolume;
END FOR

Plot total power dissipated in each subvolume;

// Calculate total power dissipated in object 1 and in object 2;

        FOR each subvolume i:
            IF subvolume i is in object 1:
                Add the total power dissipated in subvolume i to the total power
                dissipated in object 1;
            ELSE IF subvolume i is in object 2:
                Add the total power dissipated in subvolume i to the total power
                dissipated in object 2;
            END IF
        END FOR

// Calculation of conductance

FOR all temperatures defined by the user
        FOR each frequency ω:
            Calculate spectral conductance from spectral transmission coefficient;

            Calculate total conductance by integrating the spectral conductance;

            Calculate spectral heat transfer coefficient from spectral transmission coefficient;

            Calculate total heat transfer coefficient by integrating the spectral heat transfer
            coefficient;
        END FOR
END FOR

Plot spectral conductance;

Save workspace variables;
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