plotTDKCharDataset

Explore TDK TAS2141 characterization dataset and plot its content.

Contents

Syntax

```
plotTDKCharDataset()
```

Description

plotTDKCharDataset() explores the dataset and plot its content in three docked figure windows. Loads dataset location from config.mat.

Examples

```
plotTDKCharDataset();
```

Input Arguments

None

Output Arguments

None

Requirements

- Other m-files: none
- Subfunctions: none
- MAT-files required: data/TDK_TAS2141_Characterization_2020-10-22_18-12-16-827.mat, data/config.mat

See Also

- plot
- imagesc
- polarplot


```
function plotTDKCharDataset()
    try
        % load dataset path and dataset content into function workspace
        load('config.mat', 'PathVariables');
        load(PathVariables.tdkDatasetPath, 'Data', 'Info');
        close all;
    catch ME
        rethrow(ME)
    end

    % figure save path for different formats
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

```
fig1Filename = 'tdk_magnetic_stimulus';
fig1Path = fullfile(PathVariables.saveFiguresPath, fig1Filename);
fig1SvgPath = fullfile(PathVariables.saveImagesPath, 'svg', fig1Filename);
fig1EpsPath = fullfile(PathVariables.saveImagesPath, 'eps', fig1Filename);
fig1PdfPath = fullfile(PathVariables.saveImagesPath, 'pdf', fig1Filename);

fig2Filename = 'tdk_cosinus_bridge';
fig2Path = fullfile(PathVariables.saveFiguresPath, fig2Filename);
fig2SvgPath = fullfile(PathVariables.saveImagesPath, 'svg', fig2Filename);
fig2EpsPath = fullfile(PathVariables.saveImagesPath, 'eps', fig2Filename);
fig2PdfPath = fullfile(PathVariables.saveImagesPath, 'pdf', fig2Filename);

fig3Filename = 'tdk_sinus_bridge';
fig3Path = fullfile(PathVariables.saveFiguresPath, fig3Filename);
fig3SvgPath = fullfile(PathVariables.saveImagesPath, 'svg', fig3Filename);
fig3EpsPath = fullfile(PathVariables.saveImagesPath, 'eps', fig3Filename);
fig3PdfPath = fullfile(PathVariables.saveImagesPath, 'pdf', fig3Filename);

% load needed data from dataset in to local variables for better handling
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% check if modulation fits to following reconstructioning
if ~strcmp("triang", Info.MagneticField.Modulation)
    error("Modulation function is not triang.");
end
if ~(strcmp("cos", Info.MagneticField.CarrierHx) && ...
        strcmp("sin", Info.MagneticField.CarrierHy))
    error("Carrier functions are not cos or sin.");
end

% modulation frequency
fm = Info.MagneticField.ModulationFrequency;
% carrier frequency
fc = Info.MagneticField.CarrierFrequency;
% max and min amplitude
Hmax = Info.MagneticField.MaxAmplitude;
Hmin = Info.MagneticField.MinAmplitude;
% step range or window size for output picking
Hsteps = Info.MagneticField.Steps;
% resoulution of H steps
Hres = Info.MagneticField.Resolution;
% get unit strings from
kApm = Info.Units.MagneticFieldStrength;
Hz = Info.Units.Frequency;
mV = Info.Units.SensorOutputVoltage;

% get dataset infos and format strings to place in figures
% subtitle string for all figures
infoStr = join([Info.SensorManufacturer, Info.Sensor, Info.SensorTechnology, ...
    Info.SensorType, "Sensor Characterization Dataset."]);
dateStr = join(["Created on", Info.Created, "by", 'Thorben Sch\"uthe', ...
    "and updated on", Info.Edited, "by", Info.Editor + "."]);

% load characterization data
Vcos = Data.SensorOutput.CosinusBridge;
Vsin = Data.SensorOutput.SinusBridge;
gain = Info.SensorOutput.BridgeGain;

% clear dataset all loaded
clear Data Info;

% reconstruct magnetic stimulus and reduce the view for example plot by 10
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% number of periods reduced by factor 10
reduced = 10;
nPeriods = fc / fm / reduced;
% number of samples for good looking 40 times nPeriods
nSamples = nPeriods * 400;
% half number of samples
nHalf = round(nSamples / 2);
```

```
    % generate angle base
    phi = linspace(0, nPeriods * 2 * pi, nSamples);
    % calculate modulated amplitude, triang returns a column vector, transpose
    Hmag = Hmax * triang(nSamples)';
    % calculate Hx and Hy stimulus
    Hx = Hmag .* cos(phi);
    Hy = Hmag .* sin(phi);
    % index for rising and falling stimulus
    idxR = 1:nHalf;
    idxF = nHalf:nSamples;
    % find absolute min and max values in bridge outputs for uniform colormap
    A = cat(3, Vcos.Rise, Vcos.Fall, Vcos.All, Vcos.Diff, Vsin.Rise, ...
        Vsin.Fall, Vsin.All, Vsin.Diff);
    Vmax = max(A, [], 'all');
    Vmin = min(A, [], 'all');
    clear A;

    % figure 1 magnetic stimulus
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    fig1 = figure('Name', 'Magnetic Stimulus', ...
        'NumberTitle' , 'off', ...
        'WindowStyle', 'normal', ...
        'MenuBar', 'none', ...
        'ToolBar', 'none', ...
        'Units', 'centimeters', ...
        'OuterPosition', [0 0 30 30], ...
        'PaperType', 'a4', ...
        'PaperUnits', 'centimeters', ...
        'PaperOrientation', 'landscape', ...
        'PaperPositionMode', 'auto', ...
        'DoubleBuffer', 'on', ...
        'RendererMode', 'manual', ...
        'Renderer', 'painters');

    tdl = tiledlayout(fig1, 2, 2, ...
        'Padding', 'compact', ...
        'TileSpacing' , 'compact');

    title(tdl, 'Reconstructed $H_x$-/ $H_y$-Stimulus in Reduced View', ...
        'FontWeight', 'normal', ...
        'FontSize', 18, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    subtitle(tdl, [infoStr; dateStr], ...
        'FontWeight', 'normal', ...
        'FontSize', 14, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    xlabel(tdl, sprintf('$\\phi$ in rad, %d periods, reduced by factor %d', nPeriods*redu
ced, reduced), ...
        'FontWeight', 'normal', ...
        'FontSize', 16, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel(tdl, sprintf('$H_x$, $H_y$, $|H|$ in %s', kApm), ...
        'FontWeight', 'normal', ...
        'FontSize', 16, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % Hx stimulus
    nexttile;
    p = plot(phi, Hmag, phi, -Hmag, phi(idxR), Hx(idxR), phi(idxF), Hx(idxF));
    set(p, {'Color'}, {'k', 'k', 'b', 'r'}');
    legend([p(1) p(3) p(4)], {'mod', 'rise', 'fall'},...
        'FontWeight', 'normal', ...
        'FontSize', 9, ...
```

```
        'FontName', 'Times', ...
        'Interpreter', 'latex', ...
        'Location', 'NorthEast');

    xticks((0:0.25*pi:2*pi) * nPeriods);
    xticklabels({'0', '8\pi', '16\pi', '24\pi', '32\pi', '40\pi', '48\pi', '56\pi', '64\p
i'});
    xlim([0 phi(end)]);
    ylim([Hmin Hmax]);

    xlabel('$\phi$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_x(\phi)$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title(sprintf('Modulation $f_m = %1.2f$ %s, Cos-Carrier $f_c = %1.2f$ %s', fm, Hz, fc
, Hz), ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % Hy stimulus
    nexttile;
    p = plot(phi, Hmag, phi, -Hmag, phi(idxR), Hy(idxR), phi(idxF), Hy(idxF));
    set(p, {'Color'}, {'k', 'k', 'b', 'r'}');
    legend([p(1) p(3) p(4)], {'mod', 'rise', 'fall'},...
        'FontWeight', 'normal', ...
        'FontSize', 9, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex', ...
        'Location', 'NorthEast');

    xticks((0:0.25*pi:2*pi) * nPeriods);
    xticklabels({'0', '8\pi', '16\pi', '24\pi', '32\pi', '40\pi', '48\pi', '56\pi', '64\p
i'});
    xlim([0 phi(end)]);
    ylim([Hmin Hmax]);

    xlabel('$\phi$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y(\phi)$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title(sprintf('Modulation $f_m = %1.2f$ %s, Sin-Carrier $f_c = %1.2f$ %s', fm, Hz, fc
, Hz), ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % polar for rising modulation
    nexttile;
    polarplot(phi(idxR), Hmag(idxR), 'b');
    title('$|H(\phi)| \cdot e^{-j\phi}$ f. $0 \le \phi \le 32\pi$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
```

```
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % polar for rising modulation
    nexttile;
    polarplot(phi(idxF), Hmag(idxF), 'r');
    title('$|H(\phi)| \cdot e^{-j\phi}$ f. $32\pi \le \phi \le 64\pi$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % figure 2 cosinus bridge outputs
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    fig2 = figure('Name', 'Cosinus Bridge', ...
        'NumberTitle' , 'off', ...
        'WindowStyle', 'normal', ...
        'MenuBar', 'none', ...
        'ToolBar', 'none', ...
        'Units', 'centimeters', ...
        'OuterPosition', [0.0 0.0 30.0 30.0], ...
        'PaperType', 'a4', ...
        'PaperUnits', 'centimeters', ...
        'PaperOrientation', 'landscape', ...
        'PaperPositionMode', 'auto', ...
        'DoubleBuffer', 'on', ...
        'RendererMode', 'manual', ...
        'Renderer', 'painters');

    tdl = tiledlayout(fig2, 2, 2, ...
        'Padding', 'normal', ...
        'TileSpacing' , 'compact');

    title(tdl, 'Measured Cosinus Bridge Outputs of Corresponding $H_x$-/ $H_y$-Amplitudes
', ...
        'FontWeight', 'normal', ...
        'FontSize', 18, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    subtitle(tdl, [infoStr; dateStr], ...
        'FontWeight', 'normal', ...
        'FontSize', 14, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    xlabel(tdl, sprintf('$H_x$, $H_y$ in %s, %d Steps in %.4f %s', kApm, Hsteps, Hres, kA
pm), ...
        'FontWeight', 'normal', ...
        'FontSize', 16, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    colormap('jet');

    % cosinus bridge recorded during rising stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vcos.Rise);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~isnan(Vcos.Rise));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
```

```
    'FontName', 'Times', ...
    'Interpreter', 'latex');

ylabel('$H_y$', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

title('Rising $H$-Amplitudes', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

% cosinus bridge recorded during falling stimulus
nexttile;
im = imagesc([Hmin Hmax], [Hmin Hmax], Vcos.Fall);
set(gca, 'YDir', 'normal');
set(im, 'AlphaData', ~isnan(Vcos.Fall));
caxis([Vmin, Vmax]);
xlim([Hmin Hmax]);
ylim([Hmin Hmax]);
yticks(xticks);
axis square xy;
grid on;

xlabel('$H_x$', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

ylabel('$H_y$', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

title('Falling $H$-Amplitudes', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

% cosinus bridge recorded during superimposed stimulus
nexttile;
im = imagesc([Hmin Hmax], [Hmin Hmax], Vcos.All);
set(gca, 'YDir', 'normal');
set(im, 'AlphaData', ~(~Vcos.All));
caxis([Vmin, Vmax]);
xlim([Hmin Hmax]);
ylim([Hmin Hmax]);
yticks(xticks);
axis square xy;
grid on;

xlabel('$H_x$', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

ylabel('$H_y$', ...
    'FontWeight', 'normal', ...
    'FontSize', 12, ...
    'FontName', 'Times', ...
    'Interpreter', 'latex');

title('Superimposed $H$-Amplitudes', ...
    'FontWeight', 'normal', ...
```

```
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % cosinus bridge recorded during differentiated stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vcos.Diff);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~isnan(Vcos.Diff));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title('Differentiated $H$-Amplitudes', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % add colorbar and place it overall plots
    cb = colorbar;
    cb.Layout.Tile = 'east';
    cb.Label.String = sprintf('$V_{cos}(H_x, H_y)$ in %s, Gain $ = %.1f$', mV, gain);
    cb.Label.Interpreter = 'latex';
    cb.Label.FontSize = 16;

    % figure 3 sinus bridge outputs
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    fig3 = figure('Name', 'Sinus Bridge', ...
        'NumberTitle' , 'off', ...
        'WindowStyle', 'normal', ...
        'MenuBar', 'none', ...
        'ToolBar', 'none', ...
        'Units', 'centimeters', ...
        'OuterPosition', [0.0 0.0 30.0 30.0], ...
        'PaperType', 'a4', ...
        'PaperUnits', 'centimeters', ...
        'PaperOrientation', 'landscape', ...
        'PaperPositionMode', 'auto', ...
        'DoubleBuffer', 'on', ...
        'RendererMode', 'manual', ...
        'Renderer', 'painters');

    tdl = tiledlayout(fig3, 2, 2, ...
        'Padding', 'normal', ...
        'TileSpacing' , 'compact');

    title(tdl, 'Measured Sinus Bridge Outputs of Corresponding $H_x$-/ $H_y$-Amplitudes',
...
        'FontWeight', 'normal', ...
        'FontSize', 18, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    subtitle(tdl, [infoStr; dateStr], ...
```

```
        'FontWeight', 'normal', ...
        'FontSize', 14, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    xlabel(tdl, sprintf('$H_x$, $H_y$ in %s, %d Steps in %.4f %s', kApm, Hsteps, Hres, kA
pm), ...
        'FontWeight', 'normal', ...
        'FontSize', 16, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    colormap('jet');

    % sinus bridge recorded during rising stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vsin.Rise);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~isnan(Vsin.Rise));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title('Rising $H$-Amplitudes', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % sinus bridge recorded during falling stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vsin.Fall);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~isnan(Vsin.Fall));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title('Falling $H$-Amplitudes', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
```

```
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % sinus bridge recorded during superimposed stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vsin.All);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~(~Vsin.All));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title('Superimposed $H$-Amplitudes', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % sinus bridge recorded during differentiated stimulus
    nexttile;
    im = imagesc([Hmin Hmax], [Hmin Hmax], Vsin.Diff);
    set(gca, 'YDir', 'normal');
    set(im, 'AlphaData', ~isnan(Vsin.Diff));
    caxis([Vmin, Vmax]);
    xlim([Hmin Hmax]);
    ylim([Hmin Hmax]);
    yticks(xticks);
    axis square xy;
    grid on;

    xlabel('$H_x$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    ylabel('$H_y$', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    title('Differentiated $H$-Amplitudes', ...
        'FontWeight', 'normal', ...
        'FontSize', 12, ...
        'FontName', 'Times', ...
        'Interpreter', 'latex');

    % add colorbar and place it overall plots
    cb = colorbar;
    cb.Layout.Tile = 'east';
    cb.Label.String = sprintf('$V_{sin}(H_x, H_y)$ in %s, Gain $ = %.1f$', mV, gain);
    cb.Label.Interpreter = 'latex';
    cb.Label.FontSize = 16;

    yesno = input('Save? [y/n]: ', 's');
```

```
    if strcmp(yesno, 'y')
        % save results of figure 1
        savefig(fig1, fig1Path);
        print(fig1, fig1SvgPath, '-dsvg');
        print(fig1, fig1EpsPath, '-depsc', '-tiff', '-loose');
        print(fig1, fig1PdfPath, '-dpdf', '-loose', '-fillpage');

        % save results of figure 2
        savefig(fig2, fig2Path);
        print(fig2, fig2SvgPath, '-dsvg');
        print(fig2, fig2EpsPath, '-depsc', '-tiff', '-loose');
        print(fig2, fig2PdfPath, '-dpdf', '-loose', '-fillpage');

        % save results of figure 3
        savefig(fig3, fig3Path);
        print(fig3, fig3SvgPath, '-dsvg');
        print(fig3, fig3EpsPath, '-depsc', '-tiff', '-loose');
        print(fig3, fig3PdfPath, '-dpdf', '-loose', '-fillpage');
    end
    close(fig1)
    close(fig2)
    close(fig3)
end
```

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